

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 n 9

1. Edition

En

PES 6 A 90 D 410 RS 2293 RQV 300-1425 AB 740-2L

supersedes -
company: Daimler-Benz
engine: OM 352
96 kW (131 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,7-9,8	6,2 - 6,3	0,3(0,45)			
300	7,5-7,7	0,9 - 1,5	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1470	15,2-17,8	-	-	-	ca. 14	100	min. 9,1	250	0,7-1,0
ca. 59	8,7	1455-1465					300	7,5-7,7	640	3,2-3,5
	4,0	1550-1580					875	max. 1,0	1035	5,5-5,7
	1700	0 - 1,0				370-520 3a			1425	8,1

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	61,5 - 62,5 (59,5 - 64,5)	1455-1465*	-	-	100	71,0 - 81,0 para 13,9-14,8 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2
8.82
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①

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 MB 5,7 u 6

1. Edition

En

PES 6 A 90 D 410 RS 2569 RQV 300-1400 AB 1111-2L

supersedes

company: Daimler-Benz

engine: OM 352

88 kW (120 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,25-2,35}
(2,20-2,40) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,8-9,9	5,5 - 5,6	0,3(0,45)			
300	8,2-8,4	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1400	15,2-17,8	-	-	-	approx. 28	100	min. 9,8	250	0,7-0,9
approx. 62	8,8 4,0 1630	1440-1450 1530-1560 0 - 1,0					300	8,2-8,4	630	3,7-3,8
							550-610 = 2,0		1020	5,3-5,4
									1400	7,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	54,5-55,5 (52,5-57,5)	1440-1450*	500	46,5-49,5 (44,5-51,5)	100	73,0-83,0 at 14,8- 15,2 mm RW	1400 500 630 1000	9,8+0,1 11,0+0,1 10,8+0,2 10,1+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

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E2

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 3,8 n 9

1. Edition

En

PES 4 A 90 D 410 RS 2570

RQV 300-1400 AB 1111-3L

supersedes

company Daimler-Benz

engine OM 314

57 kW (77 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,25-2,35 \\ (2,20-2,40) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,5+0,1	5,9 - 6,0	0,3(0,45)			
300	8,3-8,5	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	approx. 24	100 300 545-605 = 2,0	min. 10,0 8,3-8,5	250 630 1020 1400	0,7-0,9 4,8-4,9 5,3-5,4 7,7
approx. 63	9,5 4,0 1650	1440-1450 1535-1565 0 - 1,0				③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	59,0-60,0 (57,0-62,0)	1440-1450*	400	44,0-46,0 (42,0-48,0)	100	71,0-81,0	1400 400 600 1000	10,5+0,1 11,5+0,1 11,1+0,2 10,8+0,3

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 v 1

3. Edition

En

superseded 1.80

company: Daimler-Benz

engine: OM 352 A

Testoil-ISO 4113

PES6A90D41ORS2571

RQV300-1400AB884L

1 - 5 - 3 - 6 - 2 - 4
0 - 60-120-180-240-300 $\pm 0,50$ (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,00-2,10$
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,2	6,8 - 6,9	0,3(0,45)			
300	$+0,1$ 6,4-6,6	0,8 - 1,4	0,2(0,4)			
600	- - -	C, 4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1400	15,2-17,8	-	-	-	approx. 11	100 300	min.8,0 6,4-6,6		
approx. 54	11,2 3,4 1750	1440-1450 1575-1605 0 - 1,0				3a	1100 580-640	max.1,0 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥	Torque-control travel ⑤ Control rod travel mm		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	68,0 - 69,0 (66,0 - 71,0)	1440-1450*	600	53,0 - 55,0 (51,0 - 57,0)	100	73,0-83,0		
					100-220(80-240)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 e 1
2. Edition

En

PES 6 A 80 D 410 RS 2085 Y RQV 300-1475 AB 533 DL

superseded 6.82
company Daimler-Benz
engine OM 352

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,15-2,25 \\ (2,10-2,30) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1450	8,2-8,3	4,6 - 4,7	0,2(0,35)			
300	7,3-7,5	1,0 - 1,6	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	approx. 14	100 300	min. 7,5 5,9-6,9	250 660 1060 1475	0,8-1,1 3,4-3,8 5,3-5,5 8,3
approx. 57	7,2 4,0 1700	1505-1515 1545-1575 0 - 1,0				330-450				

Torque control travel a = 1,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) rev/min 1		Rotational speed limitation intermediate speed rev/min 3		Fuel delivery characteristics high idle speed rev/min 4		Starting fuel delivery idle switching point rev/min 6		Torque-control travel rev/min 8		Control rod travel mm 9
2	cm ³ /1000 strokes	4a	cm ³ /1000 strokes	5a	5b	7	cm ³ /1000 strokes	8	9	
1450	46,0-47,0 (44,5-48,5)	1505-1515*	800	45,5-47,5 (44,0-49,0)		100	71,5-81,5 bei 12,9-13,3 mm RW	1450 500 800 1200	8,2-8,3 9,2-9,3 8,9-9,1 8,4-8,7	

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 x 2

2. Edition

En

PES 6 A 90 D 410 RS 2293

RQV 300-1400 AB 880 DL

superseded 6.82

company: Daimler-Benz

engine: OM 352

88 kW (120 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	9,7-9,8	6,0 - 6,1	0,3(0,45)			
300	7,6-7,8	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1430	15,2-17,8	-	-	-	approx. 14	100	min. 9,2	250	0,9-1,1
approx. 59	8,7 4,0 1650	1420-1430 1510-1540 0 - 1,0				375-525	300	7,6-7,8	630 1020 1400	3,2-3,6 5,6-5,8 8,2

Torque control travel a = 0,65 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)	Torque-control travel (5) Control rod travel mm		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
1380	59,5-60,5 (57,5-62,5)	-	600 1000	48,0-51,0 (46,0-53,0) 54,5-57,5 (52,5-59,5)	100	13,8-14,2 mm RW	1380 600 885 1160	9,7+0,1 10,3+0,1 10,1+0,2 9,7+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Testoil-ISO 4113

①

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 MB 5,7 w 1

2. Edition

En

PES 6 A 90 D 410 RS 2565

RQV 300-1400 AB 884 L .

supersedes 10.80
 company: Daimler Benz
 engine: OM 352

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke (2,05-2,25)
 2,10-2,20 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,1 + 0,1	6,1 - 6,2	0,3(0,45)			
300	6,0-6,2	0,8 - 1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max. approx. 60	1400 10,1 3,4 1750	15,2-17,8 1440-1450 1575-1605 0 - 1,0				approx. 13 310-380	100 300 590-650=2,0	min.8,0 6,0-6,2 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b)	Fuel delivery characteristics high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm ³ /1000 strokes	rev/min (4a)	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1400	61,0 - 62,0 (59,0 - 64,0)	1440-1450*	600	51,5-53,5 (49,5-55,5)	100	73,0-83,0 at 13,0 - 13,4 mm RW		
						100-220(80-240)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

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A7

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 3,8 g 3

1. Edition

En

PES 4 A 90 D 410 RS 2294

RQV 300-1425 AB 74Q-2 L

supersedes -

company:

Daimler-Benz

engine:

OM 314

62 kW (84 PS)

Unimog

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15-2,25$
($2,10-2,30$) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,7-9,8	6,3 - 6,4	0,3 (0,45)			
300	6,8-7,0	0,9 - 1,5	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1425	16,0-19,4	-	-	-	approx. 10	100	min. 7,4	250	0,8-1,0
approx 61	8,7	1460-1470					300	5,8-6,0	640	3,2-3,5
	4,0	1535-1565					750	max. 1,0	1035	5,5-5,8
	1650	0 - 1,0				370-520 (3a)			1425	8,1

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤ travel Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1400	62,5-63,5 (60,5-65,5)	1460-1470*	-	-	100	13,7-14,3 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.82

Testoil-ISO 4113

BOSCH

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Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 MB 3,8 g 2

2. Edition

En

Testoil-ISO 4113

PES 4 A 90 D 410 RS 2294

RQV 300-1425 AB 740 L

supersedes 82

company Daimler-Benz

engine OM 314

62,5 kW (85 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Branches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,1-2,3)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,7-9,8	6,3 - 6,4	0,3(0,45)			
300	6,8-7,0	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1425	16,0-19,4	-	-	-	approx. 10	100	min. 7,4	250	0,7-1,0
approx 61	8,7 4,0 1650	1460-1470 1535-1565 0 - 1,0					300	5,8-6,0	640	3,2-3,6
							750	max. 1,0	1030	5,5-5,7
									1425	8,1
						370-520				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1400	62,5 - 63,5 (60,5 - 65,5)	1460-1470 *	-	-	100	13,7-14,3 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 9,2 k 1

1. Edition

En

PES 5 A 95 D 410 LS 2543 Z: RQV 250-1100 AB 1038 DL

supersedes

company: MAN

engine: D 2565 M/MF
124 kW (168 PS)1 - 3 - 5 - 4 - 2 je $72^\circ \pm 0,5^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{1,5-1,6}{(1,45-1,65)}$ mm (from BDC) 7yl. 5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,6+0,1	9,3 - 9,5	0,3 (0,6)			
250	5,9-6,1	0,9 - 1,5	0,3 (0,5)			
1100	10,0+0,1	C, Sp. 4u.5	0,4			
500	10,7+0,2					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1140	14,4-17,6	-	-	-	approx. 13	100	min. 7,5	200	0,7-0,9
approx 41	9,0	1140-1150					250	5,9-6,1	500	3,5-3,8
	4,0	1165-1195					315-375	= 2,0	800	5,0-5,4
	1300	0 - 1,0				3a	450	max. 1,0	1100	7,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
700	92,5-94,5 (90,5-96,5)		1100	94,5-98,5 (92,5-100,5)	100	146,5-156,5	1100	10,0+0,1
							700	10,6+0,2
			500	90,5-94,5 (88,5-96,5)			500	10,7+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2
9.82
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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 5,5c

3. Edition

En

PES 6 A 90 D 410 RS 2633

RQV 300-1500 AB 1152 L

supersedes 6.82
company: FIAT
engine 8060.04.661
81 kW (110 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,2-2,3 \\ (2,15-2,35) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	9,0-9,1	4,9-5,1	0,3 (0,45)			
300	8,2-8,4	1,1-1,7	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1525	15,2-17,8	-	-	-	approx 17	100 300 900	min. 9,0 8,2-8,4 max. 1,0	250 670 1080 1500	1,1-1,3 4,5-4,8 5,0-6,2 8,3
approx. 59	8,0 4,0 1800	1540-1550 1635-1665 0 - 1,0				330-430 3a				

Torque control travel $\alpha = 0,6$ mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed ②b intermediate speed 4a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤ Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1500	48,5-49,5 (46,5-51,5)	1540-1550	900	42,0-45,0 (40,0-47,0)	100	68,0-78,0	1500 500 860 1090	9,0+0,1 9,6+0,1 9,4+0,2 9,0+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2
8.82
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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 5,5 d

1. Edition

En

PES 6 A 90 D 410 RS 2633

RQV 300-1500 AB 1165 L

supersedes

company Fiat

engine: 8060.04.662

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,2 - 2,3
(2,15-2,35)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	9,1-9,2	5,3 - 5,4	0,3(0,45)			
300	8,2-8,4	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1530	15,2-17,8	-	-	-	approx 17	100 min. 9,7 300 8,2-8,4 600-660 = 2,0 800 max. 1,0	min. 9,7 8,2-8,4 2,0 1,0	250 670 1080 1500	1,1-1,3 4,5-4,8 6,0-6,2 8,4
approx. 59	8,1 4,0 1800	1540-1550 1645-1675 0 - 1,0				330-430				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1500	52,5-53,5 (50,5-55,5)	1540-1550*	-	-	100	68,0-78,0	1500 500 930 1130	9,1+0,1 9,6+0,1 9,4+0,2 9,1+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

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A12

A12

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP001/4 KHD 15,8 k

1. Edition
En

PE 10 A 90 D 610/4 LS 2243 RQV 300-1250 AB 1005 DL

1-10- 9- 4- 3 - 6 - 5 - 8 - 7 - 2
0-27-72-99-144-171-216-243-288-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes

company:

engine:

KHD

F 10 L 413 L

199 kW (270 PS)
at 2500 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60
(1,45-1,65) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	10,0-10,1	7,3 - 7,4	0,3(0,45)			
250	7,4-7,6	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1290	15,2-17,8				approx. 13	100	mind. 7,5	200	0,2-0,8
approx. 64	9,0 4,0 1500	1290-1300 1335-1365 0 - 1,0				3a	300	5,9-6,1	600	2,4-3,0
							630-690=2,0		1290	8,2
							350-450			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1250	72,5-73,5 (70,5 - 75,5)	1290-1300*	1000	67,5-70,5 (65,5-72,5)	100	14,0-15,0 mmRW	1250	10,0-10,1	
			800	70,5-73,5 (68,5-75,5)			1000	10,0-10,2	
							800	10,4-10,6	
							500	10,9-11,1	

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 19,0 k

1. Edition

En

PE 12A 95D 610LS 2453 RQV 300-1150 AB 1083 L

superseded

company: KHD

 engine: F 12 L 413 F
 260 kW(352PS)
 at 2300 min⁻¹

 1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12
 0 -15 -60 -75 -120-135-180 -195 -240-255-300-315^{±0,5°} (^{±0,75°})

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke (1,95-2,15)
 2,00-2,10 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,5-9,6	8,8 - 9,0	0,3(0,6)			
300	6,4-6,6	1,6 - 2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in
Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	①a	Degree of deflection of control lever 4	rev/min mm 5	Control rod travel mm ④	Degree of deflection of control lever 7	rev/min mm 8	Control rod travel mm ③	①
max.	1150	15,2-17,8		-	-	-	env. 66	100 300 640-700=2,0	min.8,0 6,4-6,6	300 750 1190
approx. 66	8,5 4,0 1400	1190-1200 1240-1270 0 - 1,0					320-400 ③a			1,4-1,6 4,0-4,3 8,5

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min	cm³/1000 strokes	rev/min ④a	rev/min	cm³/1000 strokes ⑤b	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
150	87,5 - 89,5 (85,5 - 91,5)	1190-1200*	1000	87,0-90,0 (85,0-92,0)	100	120 - 130 at 14,3 - 14,7 mm RW	1100	9,5-9,6
			700	88,0-91,0 (85,0-92,0)			945	9,5-9,8
							800	9,8-10,0
							700	9,9-10,0
							400	9,9-10,0
					100-220 (80-240)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 12,7 9

1. Edition

En

PE 8 A 95 D 410 LS 2451 RQV 300-800/1100 AB 973 DL

supersedes
KHD-Köln
company F 8 L 413 F
engine 162 kW at 2200 min⁻¹

The specifications given in KHD 1 d are no longer valid due to governor modification.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,4-9,5	8,7 - 8,9	0,3(0,6)			
300	5,4-5,6	0,6 - 1,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	ca. 53							
approx. 64	8,4 4,0 1350	1140-1150 1205-1235 0 - 1,5		8,5 4,0	695-705 755-785	approx 11 320-380 (3a)	100 300 650 495-555 = 2,0	min. 7,0 5,4-5,6 max. 1,0 2,0	300 450 850 1140	1,2-1,3 2,7-3,1 7,5-7,7 8,8

Torque control travel a = 0,8 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	86,5 - 88,5 (84,5 - 90,5)	1140-1150*	700 400	88,5 - 92,5 (86,5 - 94,5) max. 84,5 (max. 86,5)	100 100-220 (80-240)	110,0-120,0 at 13,2 - 14,2 mm RW	1100 800 500	9,4-9,5 9,8-10,0 10,1-10,3

Checking values in brackets

* 1 mm less control rod travel than col. 2
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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 19,0 h

En 1. Edition

Testoil-ISO 4113

PE 12 A 95 D 610 LS 2453 RQV300-1150 AB 1047 DL

supersedes

company: KHD

F12L413FW

engine: 230kW(313PS)

at 2300 min⁻¹1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12
0 -15 -60 -75 -120-135-180 -195 -240-255-300-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $(1,95-2,15)$
 $(2,00-2,10)$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,1-9,2	7,9 - 8,1	0,3(0,6)			
300	5,9-6,1	0,9 - 1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	approx 11	100 300 540-600=2,0	min.7,5 5,9-6,1	300 750 1190	1,4-1,6 4,0-4,3 8,5
approx. 64	8,1 4,0 1350	1190-1200 1225-1255 0 - 1,0				325-400 3a				

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed ②b limitation intermediate speed		Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤ travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	④a	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	78,5 - 80,5 (76,5 - 82,5)	1190-1200*		800	78,0 - 81,0 (76,0 - 83,0)	100	119 - 129	1150 850 500	9,1-9,2 9,4-9,6 9,5-9,6

Checking values in brackets

* 1 mm less control rod travel than col 2

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 19,0 g

1. Edition

En

supersedes

company KHD

BF 12 L 413 F

engine: 353 kW at 2500 min⁻¹
Testoil-ISO 4113

PE 12 A 95 D 610LS 2449 RQV 300-1250 AB 1105 L

 1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12
 0- 15- 60-75 -120-135-180-195-240-255-300-315° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke (1,75-1,95) mm (from BDC)
 1,80-1,90

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	11,3	11,4 - 11,6	0,2(0,25)			
300	5,9-6,1	0,9 - 1,5	0,2(0,25)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1250	15,2-17,8				approx 12	100 300	min. 7,5 5,9-6,1		
approx. 66	10,3 4,0 1500	1290-1300 1360-1390 0-1,0				325-410				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1250	0,7bar 113,5-115,5 (111,5-117,5)	1290-1300*	LDA 900	0,7 bar 118,0-121,0 (116,0-123,0)	100	130,0-140,0	1250 1100	11,3 11,6
			LDA 500	0 bar 69,0- 71,0 (67,0- 73,0)	100-220 (80-240)		900	12,0

Checking values in brackets

* 1 mm less control rod travel than col 2

9.82

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
2449 with 1105 L	0,7	0,45 0,20 0	12,0 - 12,1 11,5 - 11,6 10,0 - 10,2 9,5 - 9,6

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 KHD 12,7 n
1. Edition

En

PE 8-A 95 D 410 LS 2609 RQV 300-1250 AP 1128 L

supersedes

company KHD

engine: BF 8 L 413 F

235 kW (320 PS)

at 2500 min⁻¹

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 je 45 ° $\pm 0,5$ ° ($\pm 0,75$ °)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,0-2,1}{(1,95-2,15)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,6+0,1	11,6-11,7	0,3(0,6)			
300	5,9-6,1	1,6-2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	approx 11	100 300	min. 7,5 5,9-6,1	250 580 920 1250	0,5-0,8 2,9-3,1 4,7-4,9 7,7
approx. 57	10,6 4,0 1450	1290-1300 1370-1400 0 - 1,0				380-550				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1250	0,7 bar 116,0-117,0 (114,0-119,0)	1290-1300 *	LDA 750	0,7 bar 121,0-124,0 (119,0-126,0)	100	130,0-140,0 at 15,2- 15,6 mm RW	1250 750 1000	11,6+0,1 12,4+0,1 12,1+0,2
			LDA 500	0 bar 101,5-103,5 (99,5-105,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

Testoil-ISO 4113

BOSCH

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A19

A13

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 8 A .. LS2609 with .. AB 1128	0,27	0,7 0	12,1-12,2 12,4-12,5 11,7-11,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications

Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 q 2

8. Edition

En

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2293

RSV 350-1300 AOB 783 L

Maß H = 22,5 mm

supersedes 6.82

company: Daimler-Benz

engine: OM 352 A
110 kW (150 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,15-2,25 \\ (2,10-2,30) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,0+0,1	7,0 - 7,1	0,3(0,45)			
350	6,9-7,1	0,7 - 1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in:

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	approx 25	350	6,5	1300	11,0+0,1
approx 65	X = 3,5						100	min. 19,0	500	11,6+0,1
⑤	10,0	1340-1350					350	6,9-7,1	800	11,4+0,2
	4,0	1435-1465					570-630	= 2,0		
	1550	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat. Note: changed to ... rev/min 3	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)			rev/min 4	cm ³ /1000 strokes 5	rev/min 7	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
rev/min 1	cm ³ /1000 strokes 2							
LDA 1300	0,7 bar 70,0-71,0 (68,0-73,0)	1340-1350*	LDA 500	0,7 bar 60,0-63,0 (58,0-65,0)	100	13,8-14,2 mm RW	-	-
800	65,5-68,5 (63,5-70,5)		LDA 500	0 bar 54,0-56,0 (52,0-58,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6A.. RS 2293 with.. AOB 783 L	0,38	0,7 0 0,28	11,4 - 11,5 11,6 - 11,7 10,8 - 10,9 11,0 - 11,2

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Testing the hydraulic start-locking device

Locking at: 0.45 - 0.55 bar

Unlocking at: 0.25 - 0.35 bar

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 v 11

1. Edition

En

PES 6 A 90 D 410 RS 2596

RSV 250-1400 AOB 1141 L

supersedes

company: Daimler-Benz

engine: OM 352 A

123 kW (167 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,0 - 2,1 \\ (1,95 - 2,15) \end{matrix}$ mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1380	12,3+0,1	7,9 - 8,0	0,3 (0,45)			
350	7,9-8,1	0,9 - 1,5	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	approx. 14				
	x =	5,75					350	7,9-8,1		
approx. 60							580-640	= 2,0		
⑤	11,3	1420-1430								
	4,0	1520-1550								
	1680	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	9
1	2		4	5	6	7	8		
LDA 1380	0,7 bar 79,0-80,0 (77,0-82,0)	1420-1430*	LDA 600	0,7 bar 76,5-79,5 (74,5-81,5)	100	78,0-88,0 bei 16,4- 16,8 mm RW	-	-	
			LDA 500	0 bar 51,5-52,5 (49,5-54,5)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES6A..RS2596 with..AOB1141L	0,52	0,70 0 0,21	13,3 - 13,4 11,4 - 11,5 13,0 - 13,1 11,8 - 12,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at: 0.45 - 0.55 bar

Unlocking at: 0.25 - 0.35 bar

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7x3

1. Edition

En

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2596

RSV 350-1400 AOB 1148 L

supersedes -

company: Daimler Benz

engine: OM 352 A
115 kW (155 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\begin{matrix} (1,95-2,15) \\ 2,00-2,10 \end{matrix}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1380	11,6+0,1	7,3 - 7,4	0,3(0,45)			
350	7,9+0,2	0,9 - 1,5	0,2(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0				approx. 21	350	7,5	1380	11,5+0,1
approx. 64	x =	5,0					100	min. 19	500	12,6+0,1
							350	7,9-8,1	950	12,0+0,3
							530-590	= 2,0		
⑤		1420-1430 = 10,6								
		1510-1540 = 4,0								
		1620 = 0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to rev/min							
rev/min	cm ³ /1000 strokes	3	4	5	6	7	8	9	Control rod travel mm
1	2								
LDA 1380	0,7 bar 73,0-74,0 (71,0-76,0)	1420-1430*	LDA 500	0,7 bar 63,5-66,5 (61,5-68,5)	100	78,0-88,0 bei 15,6- 16,0 mm RW			
			LDA 500	0 bar 54,0-57,0 (52,0-59,0)					

Checking values in brackets

* 1 mm less control rod travel than col 2

8.82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
RS 2596 with AOB 1148 L	0,43	0,7 0 0,29	12,4 - 12,5 12,6 - 12,7 11,6 - 11,7 12,0 - 12,2

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Prüfen der hydraulischen Startverriegelung:

Verriegelung bei 0,40 - 0,50 bar

Entriegelung bei 0,15 - 0,25 bar

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 RAB 10,8 a

En

2. Edition

Testoil-ISO 4113

PES 6 A 100 D 410 RS 3039 RSV 475-950 A 1 B 2121 L

supersedes 5.82

company RABA

engine 184 kW (250 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{1,6 - 1,7}
 (1,55-1,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	13,6+0,1	15,2-15,4	0,3 (0,6)			
475	5,9-6,1	1,2-1,6	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	approx. 27	475	5,5	950	13,6+0,1
approx. 49	x =	3,75					100	min. 19,5	500	15,3+0,2
							475	5,9-6,1	840	14,4+0,2
⑤	12,6	990-1000					570-630	= 2,0		
	4,0	1030-1060					675	max. 1,0		
	1195	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 950	0,7 bar 152,0-154,0 (150,0-156,0)	990-1000*	LDA 750	0,7 bar 180,0-184,0 (180,0-186,0)	-	-	-	-	
			LDA 500	0 bar 145,0-149,0 (143,0-151,0)					

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS 3039 with..A 1 B 2121L	0,7	0 0,55 0,42	15,3 - 15,4 13,7 - 13,8 15,0 - 15,1 14,1 - 14,3

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 FOR 5,9b

3. Edition

En

PES 6 A 90 D 210 RS 2465 Z RSV 250-1200 A OB 743 L

supersedes 6.82

company: Ford

engine: LKW - Tornado

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,45-2,65) 2,50-2,60 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,9+0,1	7,9 - 8,0	0,3(0,45)			
300	7,9-8,1 -----	0,9 - 1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	approx. 10	300	7,5	-	-
approx. 56 ⑤	X =	2,5					100	min. 19		
	1240-1250 = 9,9						300	7,9-8,1		
	1330-1360 = 4,0						600-660 = 2,0			
	1450 = 0,3-1,7						800	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		5a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm ³ /1000 strokes 2	3		4	5	6	7	8	9
LDA 1200	0,66 bar 78,5-79,5 (76,5-81,5)	1240-1250*		LDA 400	0 bar 44,5-46,5 (42,5-48,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at $n = 1200$ rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
2465 Z with 743 L	0,66		10,9 - 11,0
		0,47	10,6 - 10,8
		0,34	10,1 - 10,2
		0	10,0 - 10,1

Notes

(1) when $n =$

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 EIC 3,9 b

1. Edition

En

PES 4 A 80 D 320 RS 2651 RSV 300-1075 A1B 2175 R

supersedes -

company Eicher

engine EDL 4-1

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $2,15-2,25$
 $(2,1 - 2,3)$ mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1075	10,5+0,1	6,2-6,3	0,2 (0,35)			
300	9,4-9,6	3,0-4,0	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	approx. 26	300	9,0	1075	10,5+0,1
approx. 57	X =	5,5					100 min	19,5	500	11,3+0,1
⑤	9,5	1115-1125					300	9,4-9,6	825	10,8+0,2
	4,0	1165-1195					450-510	=2,0		
	1330	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min	cm ³ /1000 strokes	3		4	5	6	7	8	9
1	2								
1075	62,0-63,0 (60,5-64,5)	1115-1125*		600	64,5-66,5 (63,0-68,0)	100	17,4-18,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

Test Specifications

Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 w5

4. Edition

En

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2569

RSV 350-1400 AOB 1135 L

supersedes

2.82

company

Daimler Benz

engine

OM 352

92 kW (125 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,20-2,40)

2,25-2,35

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1400	10,8+0,1	6,2 - 6,3	0,3(0,45)			
350	7,9-8,0	0,5 - 1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	approx. 24	350	4,1	1400	10,8+0,1
	x =	5,0							750	10,8+0,3
approx 65							350	7,9-8,0	500	11,3+0,1
⑤							610-670	=2,0		
	1440-1450	=9,8								
	1550-1580	=4,0								
	1650	=0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to rev/min							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1400	62,5 - 63,5 (60,5 - 65,5)	1440-1450*		500	44,5 - 47,5 (42,5 - 49,5)	100	79,25-89,25 16,2-16,6 mm RW	-	-
				900	53,5 - 56,5 (51,5 - 58,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 5,7 w 10

1. Edition

En

PES 6 A 90 D 410 RS 2569 RSV 350-1400 AOB 1135-1 L

supersedes

company:

Daimler-Benz

engine:

OM 352

88 kW (120 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,25-2,35}{(2,2 - 2,4)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,8-9,9	5,5 - 5,6	0,3(0,45)			
350	8,3-8,5	0,9 - 1,5	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	approx 20	350	7,9	1400	9,8+0,1
approx 63	x	= 5,25					100	min.19,0	500	11,1+0,1
⑤	8,8	1440-1450					350	8,3-8,5	950	10,6+0,3
	4,0	1505-1535					610-670	= 2,0		
	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to rev/min							
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9	
1400	54,5-55,5 (52,5-57,5)	1440-1450*	500	46,5-49,5 (44,5-51,5)	100	78,0-88,0 bei 16,2- 16,6 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

8.82

BOSCH

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 EIC 2,9 c 1

1. Edition

En

PES 3 A 90 D 320 RS 2626 RSV 300-1050 A 1 B 2171 R

1 - 3 - 2 je $120^\circ \pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes

company: Eicher

engine: EDL 3-1
40 kW (54 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke

2,2 - 2,3
(2,15 - 2,35)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1050	11,4+0,1	7,3 - 7,4	0,2(0,45)			
300	9,7-9,9	3,3 - 3,9	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	approx. 28	300	9,3	1050	11,4+0,1
	x =	5,0					100	min.19,5	500	12,0+0,1
approx. 59							300	9,7-9,9	890	11,7+0,2
⑤	10,4 4,0 1310	1090-1100 1145-1175 0,3-1,7					445-505	= 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to rev/min							
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1050	73,0-74,0 (71,0-76,0)	1090-1100*		500	66,5-69,5 (64,5-71,5)	100	78,0-88,0 bei 14,0 - 14,6 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 PEN 10,0 d

En

1. Edition

PE 6 P 110 A 320 RS 138 Z

RSV 200-900 P 1/305 R

supersedes -

company: Volvo Penta

engine: D 100 B/PP

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,6-2,7$
(2,55-2,75) mm (from BDC) bei RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	8,4-8,5	8,8-9,0	0,4 (0,8)			
225	5,3-5,5	1,0-1,4	0,3 (0,6)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	approx. 23	225	4,9	-	-
	x =	4,75					100	min.20,0		
approx. 54 ⑤	7,4	940-950					225	5,3-5,5		
	4,0	970-1000					310-370	=2,0		
	1130	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9
700	88,0-90,0 (85,0-93,0)	940-950*	-	-	100	310,0-340,0 bei 20,0 - 21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 PEN 12,0 a 2
2. Edition
En

Testoil-ISO 4113

PE 6 P 110 A 320 RS 175 RSV 200-900 P4/421 R

supersedes 8.81
company: Volvo-Penta
engine: TD 120

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,6 - 2,7$
(2,55-2,75) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	8,4-8,5	11,9 - 12,1	0,4(0,8)			25 ± 0,1 (2,2 - 2,9)
225	5,1-5,3	1,3 - 1,7	0,25(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
100se	800	0,3-1,0	-	-	-	approx. 25	225	4,7	-	-
approx. 56	x =	5,0					100	min. 19,0		
⑤	7,4	940-950					225	5,1-5,3		
	4,0	955-980					280-340	=2,0 mm		
	1120	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
700	119,0-121,0 (116,0-124,0)	940-950 *		-	-	100	19,0 - 21,0 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

BOSCH

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Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 5,7 r 3

2. Edition

En

PES 6 A 90 D 410 RS 2293 Z RSV 350-750 A0B 741 L

supersedes 6.82

company: Daimler-Benz
engine: OM 352

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,1 - 2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	9,8-9,9	5,0-5,1	0,3(0,45)			
350	6,4-6,6	0,5-1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	approx. 15	350	6,5	-	-
approx. 26 ⑤	750	8,8					100	min.19,0		
	788-796	4,0					380-410	= 2,0		
	820	0,3-1,7					450	max.1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
700	50,0-51,0 (48,0-53,0)	750 *		-	-	100	78,0-88,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 r 4

2. Edition

En

PES 6 A 90 D 410 RS 2293 RSV 350-750 AOB 741 L

supersedes 6.82

company: Daimler-Benz
engine: OM 352 A
62,5 kW (85 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,15-2,25 \\ (2,10-2,30) \end{matrix}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	10,9+0,1	6,3 - 6,5	0,3(0,45)			
350	7,9-8,1	1,9 - 2,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	approx. 15	350	8,0	-	-
approx. 26	x = 20						100 min. 19,0			
⑤	750	9,9					385-415 = 2,0			
	788-795	4,0								
	820	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to rev/min							
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	5	4	5	6	7	8	9
700	63,0-65,0 (61,0-67,0)	750 *	-	-	-	100	78,0-88,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 q 6

2. Edition

En

PES 6 A 90 D 410 RS 2293-1

RSV 350-1400 AOB 745-1L

supersedes 6.82

company Daimler-Benz

engine OM 352 A

115 kW (156 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	11,9+0,1	7,6 - 7,7	0,3(0,45)			
350	7,8-8,0	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	approx. 29	350	7,4	-	-
approx. 61	X =	4,25					100	min. 19,0		
⑤	10,9	1420-1430					350	7,8-8,0		
	4,0	1510-1540					550-610	= 2,0		
	1700	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational- speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
1380	75,5-76,5 (73,5-78,5)	1420-1430*	600	63,0-66,0 (61,0-68,0)	100	88,0-98,0 bei 16,3 - 16,7 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MWM 2,1 b

2. Edition

En

PES 2 A 80 D 320 RS 1337 RSV 300-1000 A7B 505-1R

superseded 6.82

company: MWM

engine: D 226-2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,2 - 2,3 \\ (2,15 - 2,35) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
980	9,7-9,8	4,8-4,9	0,2 (0,35)			
300	7,2-7,4	1,0 - 1,6	0,2 (0,3)			
600	9,7-9,9	C, Sp. 4 u. 5	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	approx. 27	300	5,5	-	-
approx. 66	X =	6,0					100	min. 19,0		
⑤	8,7	1020-1030					300	5,9-6,1		
	4,0	1050-1080					350-410	= 2,0		
	1205	0,3-1,7					450	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
980	48,0-49,0 (46,5-50,5)	1020-1030*		600	40,5-43,5 (39,0-45,0)	100	88,5-104,5 bei 19,0- 21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

Testoil-ISO 4113

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B16

B16

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7x4

1. Edition

En

PES 6 A 90 D 410 RS 2569

RSV 350-1250 AOB 1130-1L

supersedes -

company: Daimler-Benz

engine: OM 352

92 kW (125 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke (2,20-2,40)
 2,25-2,35 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,9+0,1	6,1 - 6,2	0,3(0,45)			
350	8,1-8,3	0,8 - 1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0				approx. 15	350	8,2	1250	10, +0,1
	x =	5,0					100	min. 19	500	11,9+0,1
approx. 51	1290-1300 = 9,9						350	8,1-8,3	1025	11,3+0,3
⑤	1410-1450 = 4,0									
	1550	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min	3						
rev/min 1	cm ³ /1000 strokes 2			rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1250	61,0-62,0 (59,0-64,0)		1290-1300*	500	52,0-55,0 (50,0-57,0)	100	78,0-88,0 bei 16,4- 16,8 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 w 9

1. Edition

En

PES 6 A 90 D 410 RS 2569 RSV 350-1400 AOB 2098 L

supersedes

company: Daimler-Benz

engine: OM 352

96 kW (131 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,25-2,35$
(2,2 - 2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	12,4+0,1	6,2 - 6,3	0,3(0,45)			
350	10,0+0,2	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	approx. 27	350	8,0	1380	12,4-12,5
	X =	4,0					100	min.19,0	900	13,0-13,1
approx. 68 ⑤	11,4	1420-1430					350	7,9-8,1	1225	12,6-12,9
	4,0	1500-1530					500-560	= 2,0		
	1625	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1380	62,0-63,0 (60,0-65,0)	1420-1430*		900	60,5-63,5 (58,5-65,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MWM 3,1a

1. Edition

En

PES 3 A 80 D 320 RS 1338 RSV 300-1000 A 7 B 505-1R

supersedes -

company: MWM

engine: D 226-3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,2-2,3}
(2,25-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
980	9,7-9,8	4,8-4,9	0,2(0,35)			
300	7,2-7,4	1,0-1,6	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	approx. 27	300	5,5	-	-
approx. 66	X = 6,0						100	min. 19,0		
⑤	8,7	1020-1030					300	5,9-6,1		
	4,0	1050-1080					350	4,10-2,0		
	1205	0,3-1,7					450	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat. Note: changed to ... rev/min 3	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2		4	5	6	7	8	9
980	48,0-49,0 (46,5-50,5)	1020-1030*	600	40,5-43,5 (39,0-45,0)	100	88,5-104,5 bei 19,0-2,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MWM 4,1 a

1. Edition

En

PES 4 A 80 D 320 RS 1339

RSV 300-1000 A7B 505-1R

supersedes

company MWM

engine: D 226-4

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\begin{matrix} 2,2 - 2,3 \\ (2,15 - 2,35) \end{matrix}$ mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
980	9,7-9,8	4,8 - 4,9	0,2(0,35)			
300	7,2-7,4	1,0 - 1,6	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9	10	11
100se	800	0,3-1,0	-	-	-	approx 27	300	5,5	-	-
approx. 66	x =	6,0					100	min.19,0		
⑤	8,7	1020-1030					300	5,9-6,1		
	4,0	1050-1080					350-410	= 2,0		
	1205	0,3-1,7					450	max.1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
980	48,0 - 49,0 (46,5 - 50,5)	1020-1030*	600	40,5 - 43,5 (39,0 - 45,0)	100	88,5-104,5 bei 19,0-21,0 mm RW	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 8,3 n 1

1. Edition

En

Testoil-ISO 4113

PE 6 A 95 D 410 RS 2575

RSV 250-1200 A5B 2151 L

supersedes _

company: DAF

engine: DH 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\overset{2,0 - 2,1}{(1,95 - 2,15)}$ mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1200	10,4+0,1	7,1 - 7,3	0,3 (0,6)			
250	6,0-6,2	0,7 - 1,1	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	approx. 24	250	5,6	1200	10,5+0,1
approx. 58 ⑤	X = 5,0						250	6,0-6,2	500	11,1+0,1
							635-695	= 2,0	800	11,1+0,1
	9,4	1240-1250							940	10,7+0,3
	4,0	1340-1370								
	1505	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1200	70,5-72,5 (68,5-74,5)	1240-1250*	800	72,5-75,5 (70,5-77,5)	100	121,5-131,5 bei 19,5-21,0 mm RW			

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 8,7 c 3

1. Edition

En

PE 6 A 90 D 410 RS 2124 X

RQ 300/1275 AB 658 DL

supersedes

company Daimler-Benz

engine OM 360

125 kW (170 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,1 - 2,3)}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	9,3-9,4	7,7 - 7,8	0,3(0,45)			
300	4,9-5,1	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
700	15,6-16,4	700	16,0	8,3 4,0	1290-1305 1345-1375	300	5,0	100 300 350-390 475	min. 6,5 4,9-5,1 = 2,0 max. 1,0	1250 500 850 1040	9,3-9,4 10,1-10,2 9,8-10,0 9,4-9,7

Torque-control travel on flyweight assembly dimension a = 0,4 mm Speed regulation: At 1290-1305 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	4	5	6	7
1250	77,0-78,0 (75,0-80,0)	450	500 800	69,0-72,0 (67,0-74,0) 77,0-80,0 (75,0-82,0)	100	15,3-21,0 mm RW

Checking values in brackets

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 11,8 a 2

1. Edition

En

PE 6 P 100 A /20 RS 15

RQ 250/1100 PA 43 DR

supersedes

company Daimler-Benz

engine OM 355

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

 $2,8 - 2,9$
 $(2,75-2,95)$ mm (from BDC) $9,0 - 12,0$ mm RW

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	13,4+0,1	11,6 - 11,8	0,3(0,6)			
250	7,9-8,1	1,8 - 2,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	12,4 4,0 1350	1145-1160 1200-1230 0 - 1,0	250	8,0	100 250 410-450	min.9,6 7,9-8,1 = 2,0	-	-

Torque-control travel

on flyweight assembly dimension a =

0

mm

Speed regulation. At

1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	4	5	6	7
1100	116,0-118,0 (114,0-120,0)	450	450	104,0-108,0 (102,0-110,0)	100	140,0-160,0

Checking values in brackets

Testoil-ISO 4113

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 18,3 c

1. Edition

En

PE 10 P 110 A 320 LS 3818 RQ 300/1150 PA 437-2

supersedes

company Daimler-Benz

engine OM 423

261 kW (355 PS)

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4
0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0 - 4,1$ mm (from BDC) Zyl. 10
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,1+0,1	12,6 - 12,8	0,4 (0,8)			
300	8,5-8,7	1,2 - 2,0	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		Test specifications rev/min 6		Control rod travel mm 8		Test specifications rev/min 9		Control rod travel mm 12	
600	13,0-14,0	600	13,5	11,1 4,0 1350	1190-1205 1225-1255 0 - 1,5	300	6,1	100 300 400-440 = 2,0	min. 7,7 6,0-6,2	1150 600 900	12,1+0,1 12,5+0,1 12,4+0,2

Torque-control travel on flyweight assembly dimension a = 0,2 mm Speed regulation: 1190 - 1205 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes / mm 7	
1150	126,0-128,0 (123,0-131,0)	-		600	117,0-121,0 (114,0-124,0)	100	140,0-160,0
				900	115,0-120,0 (112,0-123,0)		

Checking values in brackets

8.82

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MWM 19,9 c

2. Edition

En

Testoil-ISO 4113

- (1) PE 6 P 130 A 320 RS 3057 RSUV 300-750 P 9 A 333/1R
(2) PE 6 P 130 A 300 RS 3056

superseded 1.82

company MWM - Südbremse
engine TBD 601-6 K

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Komb.-Nr. 0 401 876 712 (1)

0 401 816 704 (2)

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) mm (from BDC) at RW = 21,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	12,0+0,1	34,7 - 35,1 (34,4 - 35,4)	0,5 (0,9)			
300	5,3-5,5	4,7 - 5,5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	approx. 28	300	4,0	700	12,0+0,1
approx. 66	x = 4,75						300	5,3-5,5	325	13,2+0,6
⑤	11,0	1790-800							450	12,0+0,1
	4,0	815-845								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7 mm RW	8	9
						100	19,5-21,0		
Full-load delivery is set on the engine according to engine inspection sheet.									

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

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C1

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MWM 19,9 e

2. Edition

En

Testoil-ISO 4113

PE 6 P 120 A 320 RS 210 RSUV 300 - 900 P 10 A 330/1R

supersedes 1.82

company MWM - Südbremse

engine D/TD/TBD 601-6
TBD 601-6 S

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,3-2,4}{(2,25-2,45)}$ mm (from BDC) at RW = 21,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	13,0+0,1	26,6 - 27,0 (26,3 - 27,3)	0,5 (0,9)			
300	5,5-5,7	2,8 - 3,6	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
100se	800	0,3-1,0	-	-	-	approx. 29	300	5,1	700	13,0+0,1
	x =						100		325	14,2+0,6
approx. 70							300	5,5-5,7	450	13,0+0,1
⑤	12,0	940-950					315-375	= 2,0 mm		
	4,0	965-995								
	1080	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
					100	19,5-21,0			
Full-load delivery is set on the engine according to engine inspection sheet.									

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

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C2

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MWM 19,9 d

2. Edition

En

PE 6 P 120 A 320 RS 396 RSUV 300-750 P 9 A 333/1 R
Komb.-Nr. 0 401 876 242

supersedes 1.82

company MWM - Südbremse

engine D, TD, TBD 601-6

TBD 601-6 S

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,2-2,3} (2,15-2,35) mm (from BDC) at RW 21,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	13,0+0,1	26,6 - 27,0 (26,3 - 27,3)	0,5(0,9)			
300	5,5-5,7	2,8 - 3,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	approx.	300	5,1	700	13,0+0,1
	x =	5,25				29	100		325	14,2+0,6
approx.							300	5,5-5,7	450	13,0+0,1
70							315-375	=2,0 mm		
⑤	12,0	790-800								
	4,0	815-845								
	980	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational- speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7 mm RW	8	9
						100	19,5-21,0		

Full-load delivery is set on the engine according to engine inspection sheet.

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

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C3

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MWM 19,9 b

2. Edition

En

Testoil-ISO 4113

(1) PE6P 120 A 320 RS 353
(2) PE6P 120 A 300/3 RS 342

RSUV 300-750 P 9 A 333/1 R

supersedes 1.82

company MWM - Südbremse

Kom.-Nr. 0 401 876 215 (1)
0 401 816 053 (2)

engine D/TD/TBD 601-6
601-6 S

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,3-2,4} (2,25-2,45) mm (from BDC) at RW = 21 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	13,0+0,1	26,6 - 27,0 (26,3 - 27,3)	0,5 (0,9)			
300	5,5-5,7	2,8 - 3,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1)

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	approx. 29	300	5,1	700	13,0-13,1
approx. 70	x = 5,25						100		450	13,0-13,1
							300	5,5-5,7	325	14,2-14,8
							2,0=	315-375		
⑤	12,0=700-800									
	4,0=815-845									
	980 = 0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(1)

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2		4	5	6	7	8	9	
					100	19,5-21,0	-	-	

Full-load delivery is set on the engine according to engine inspection sheet.

Checking values in brackets

* 1 mm less control rod travel than col 2

8.82

Test Specifications

Fuel Injection Pumps and Governors

WPP-001/4 SCA 11,0 u 4

2. Edition

En

PE 6 P 120 A 720 RS 7001 RSV 350-1100 P 1/481

supersedes 5.81

company Scania

engine DS 11

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

from FD 1415,0-5,1

to FD 052

4,4-4,5

Port closing at prestroke

(4,95-5,15)

mm (from BDC)

(4,35-4,55)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	13,2+0,1	23,8 - 24,2	0,5 (0,9)			3,3 ± 0,1
350	3,9-4,1	1,6 - 2,0	0,5 (0,8)			(3,0 - 3,5)**

Adjust the fuel delivery from each outlet according to the values in []

**Due to smoothing of the sealing edge, the initial spring tension with a new delivery-valve holder must be adjusted to 3,0 ± 3,1 mm.

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	approx 2	350	3,5	-	-
approx. 58	X =	5,5					100 min. 20,0			
⑤	12,2	1140-1150					350 3,9-4,1			
	4,0	1195-1225					415-475 = 2,0			
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	rev/min	mm
1	2	3	4	5	6	7	8	9	
1100	238,0-242,0 (235,0-245,0)	1140-1150*	600	199,0-205,0 (196,0-208,0)	100	220 - 270 at 20,0- 21,0 mm RW	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 SCL 9,8 a 1

1. Edition

En

PE 8 A 95 D 410 RS 2615 RSV 325-1025 A1B 2177 L

1 - 4 - 7 - 6 - 8 - 5 - 2 - 3 je $45^\circ \pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes

company

engine

Schlüter

SDMT 110/112W8

136 kW (185 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,0 - 2,1 \\ (1,95 - 2,25) \end{matrix}$ mm (from BDC) at RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1025	12,7+0,1	10,2 - 10,4	0,3 (0,5)			
325	8,4-8,6	1,4 - 2,1	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			② Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	approx. 27	325	8,0	1025	12,7+0,1
approx. 57	x =	5,0					100	min. 19,5	500	13,1+0,1
							325	8,4-8,6	795	12,8+0,2
⑤	11,7	1065-1075					560-620 = 2,0			
	4,0	1165-1195								
	1330	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA 1025	0,7 bar 102,5-104,5 (100,5-106,5)	1065-1075*		LDA 700	0,7 bar 103,5-106,5 (101,5-108,5)	100	171,5-181,5 at 19,5- 21,0 mm RW	-	-
				LDA 500	0 bar 73,5-76,6 (71,5-78,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE8A..RS2615 with..A1B2177L	0,32		12,9 - 13,0
		0,70	13,1 - 13,2
		0	12,9 - 12,1
		0,18	12,1 - 12,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at: 0,4 - 0,5 bar

Unlocking at: 0.15 - 0.25 bar

①

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11,0 u

3. Edition

En

PE 6 P 120 A 720 RS 7001 RQV 200-1000 PA 539

supersedes 5.81
company Scania
engine DS 11

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

to FD 052 4,40-4,50
from FD 1415,0-5,1
(4,35-4,55)

Port closing at prestroke (4,95-5,15) mm (from BDC) at RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,2+0,1	22,2-22,4	0,5(0,9)			3,3 ± 0,1 **
225	4,2-4,4	1,4-1,8	0,3(0,6)			(3,0 - 3,5)

Adjust the fuel delivery from each outlet according to the values in

** Due to smoothing of the sealing edge, the initial spring tension with a new delivery-valve holder must be adjusted to 3,0 ± 3,1 mm.

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1000	15,2-17,8	-	-	-	approx. 10	100	min. 5,8	150	0,5-0,8
approx. 62	12,2 4,0 1300	1040-1050 1145-1175 0 - 1,0				255-365	225	4,2-4,4	430 720 1000	3,0-3,5 5,0-5,2 7,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)		Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5) Control rod travel mm	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9	
LDA 700	0,7 bar 222,0-224,0 (219,0-227,0)	1040-1050*	LDA 1000	0,7 bar 236,0-244,0 (233,0-247,0)	100	220,0-270,0 at 20,0 - 21,0 mm RW	-	-	
			LDA 500	0 bar 161,0-165,0 (158,0-168,0)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

Testoil-ISO 4113

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D. Adjustment Test for Manifold Pressure Compensator

Test at $n = 500$ rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 7001 with ..PA 539	0,44		12,8 - 12,9
		0,70	13,2 - 13,3
		0	11,6 - 11,7
		0,28	12,0 - 12,2

Notes

(1) when $n =$ rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 SCA 14,2 a 3

2. Edition

En

Testoil-ISO 4113

PE 8 P 120 A 920/4 LS 7002 RQV 250-1000 PA 547

1-2-7-3-4-5-6-8 je $45^\circ \pm 0,5^\circ$ ($\pm 0,75^\circ$)

superseded 6.82

company Scania

engine DS 14

Values only apply to test

nozzle-and-holder assembly 1 688 901 019

and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 from FD 141 5,0 - 5,1 to FD 052 4,4 - 4,5
 Port closing at prestroke (4,95 - 5,15) mm (from BDC) (4,35 - 4,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,2+0,1	19,2 - 19,4	0,5(0,9)			3,3 \pm 0,1 (3,0 - 3,5)
225	4,7-4,9	1,2 - 1,5	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1000	15,2-17,8	-	-	-	approx. 10	100	min. 6,4	200	1,0-1,2
approx. 60	12,2	1040-1050					225	4,7-4,9	470	3,3-3,8
	4,0	1140-1170							730	5,1-5,3
	1300	0 - 1,0				255-365			1000	7,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1040-1050*	LDA	0,7 bar	100	220,0-270,0 at 20,0-21,0 mm RW	-	-
700	192,0-194,0 (189,0-197,0)		1000	192,0-200,0 (190,0-202,0)				
			LDA 500	0 bar 143,0-147,0 (140,0-150,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

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D. Adjustment Test for Manifold Pressure Compensator

Test at n =

rev/min ^{decreasing}
~~XXXXX~~ pressure - in bar gauge pressure
^{increasing}

Pump/governor	Setting	Measurement	Control rod ^{diminution} XXXXX difference XXXXXXXX (1)
	Gauge pressure = bar	Gauge pressure = bar	mm
..LS 7002 RQV..PA 547	0,7 bar		13,2 - 13,3
		0 bar	11,3 - 11,4
		0,29 bar	12,0 - 12,2
		0,38 bar	12,5 - 12,6

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Due to smoothing of the sealing edge, the initial spring tension with a new delivery-valve holder must be adjusted to $3,0 \pm 3,1$ mm.

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 d 2

1. Edition

En

PE 6 P 120 A 320 RS 3050

RQV 250-1025 PA 611

supersedes

company Volvo

engine TD 120 FC

Values only apply to test
nozzle-and-holder assembly 1 688 901 019
and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,4 - 2,5$ mm (from BDC) at RW $9,0 - 12,0$ mm
(2,35-2,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,1+0,1	23,7 - 24,0	0,5(0,9)			
250	3,8-4,0	1,8 - 2,4	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1080	15,2-17,8	-	-	-	approx 8	100	min. 5,3	200	0,6-0,9
approx. 64	12,1	1085-1095					250	3,8-4,0	475	3,9-4,5
	4,0	1150-1180					300-360	= 2,0	670	6,4-6,6
	1300	0 - 1,0							940	
						3a			1025	7,5

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	1,2 bar 237,0-240,0 (234,0-243,0)	1085-1095*	LDA 700	0 bar 141,0-145,0 (138,0-148,0)	100	20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

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C12..

C12

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..RS3050 with ..PA611	1,67	1,20	13,1 - 13,2
		0	9,3 - 9,4
			12,1 - 12,2
		0,3	10,5 - 10,7

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,2 a 2

2. Edition

En

PE 8 P 120 A 920/4 LS 7002 RQV 200-950 PA 547

supersedes 6.82

company: Saab-Scania

engine: DSC 1401

LKW T 142

1 - 2 - 7 - 3 - 4 - 5 - 6 - 8 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test

nozzle-and-holder assembly 1 688 901 019

and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

Testoil-ISO 4113

A. Fuel Injection Pump Settings

from FD 141 5,0 - 5,1 to FD 052 4,4 - 4,5 mm
Port closing at prestroke (4,95-5,15) mm (from BDC) (4,35-4,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,8+0,1	20,2 - 20,4	0,5 (0,9)			
225	4,4-4,6	0,8 - 1,2	0,3 (0,6)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1070	15,2-17,8	-	-	-	approx 9	100 225 350-410 = 2,0	min. 6,0 4,4-4,6	150 420 680 950	0,5-0,8 2,9-3,4 4,7-4,9 7,1
approx. 59	12,8 4,0 1250	990-1000 1115-1145 0 - 1,0				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,7 bar 202,0-204,0 (199,0-207,0)	990-1000*	LDA 950 LDA 500	0,7 bar 206,0-214,0 (204,0-216,0) 0 bar 166,0-170,0 (163,0-173,0)	100	230,0-280,0 bei 20,0 - 21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE8P..LS7002 with ..PA 547	0,38	0,70 0 0,26	13,4 - 13,5 13,8 - 13,9 12,4 - 12,5 12,6 - 12,8

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 b 2

1. Edition

En

PES 6 P 120 A 320 RS 417 RQV 300-1150 PA 527-1K

supersedes

company RVI

engine MIDR 062030

Values only apply to test
nozzle-and-holder assembly 1 688 901 019
and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC) at RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	8,5-8,6	14,8-15,0	0,5 (0,9)			
300	4,1-4,3	1,8-2,4	0,5 (1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	approx. 10	100	min. 5,7	250	0,4-0,7
approx. 58	7,5	1205-1215					300	4,1-4,3	550	3,6-3,7
	4,0	1275-1305							850	5,1-5,2
	1450	0 - 1,0				330-445			1150	7,5

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤ Control rod travel mm	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	147,5-149,5 (144,5-152,5)	1205-1215*	750	132,0-138,0 (129,0-141,0)	100	130,0-150,0	1150	8,5+0,1
			500	80,0-86,0 (77,0-89,0)	300	18,0-24,0 100-220 (80-240)	350	7,0+0,4
							750	7,7+0,2
							500	7,2+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

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Test Specifications

Fuel Injection Pumps ②

and Governors

WPP 001/4 MB 11,0 p

1. Edition

En

PE 6 P 120 A 320 LS 3823 RQ 300/1150 PA 656

Values only apply to test

nozzle-and-holder assembly 1 688 901 019

and fuel-injection test tubing 1 680 750 067

supersedes -

company

Daimler-Benz

engine

OM 421 LA

184 kW (250 PS)

Euclid

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0 - 4,1$ mm (from BDC)
 $(3,95-4,15)$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,1+0,2	15,5-15,7	0,5(0,9)			
300	5,0-5,2	1,4-2,2	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Test specifications Control rod travel mm 4		Test specifications rev/min 6		Test specifications Control rod travel mm 8		Test specifications rev/min 9		Control rod travel mm 12	
600	19,2-20,8	600	20,0	10,1	1195-1210	300	5,0	100	min. 6,5	-	-
VH = max. 46°				4,0	1250-1280			300	4,9-5,1		
								350-390	= 2,0		

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation. At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes / mm 7	
LDA 1150	0,7 bar 155,0-157,0 (152,0-160,0)	-		LDA 600	0,7 bar 155,0-161,0 (152,0-164,0)	100	150,0-170,0
				LDA 500	0 bar 137,0-139,0 (134,0-142,0)		

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure : bar	Gauge pressure : bar	mm (1)	
PE 6 P..LS 3823 with ..PA 656	0,25		10,9 - 11,0	
		0,70	11,1 - 11,2	
		0	10,5 - 10,6	
		0,16	10,6 - 10,8	

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 r 3

1. Edition

En

PES 6 P 120 A 720 LS 388

RQ 250/1050 PA 452

supersedes -

company

MAN

engine

D 2566 MKF

235 kW (320 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	22,2-22,6	0,5 (0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9		Torque control rev/min 11	
	Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		Control rod travel mm 10		Control rod travel mm 12
600	19,2-20,8	600	20,0	10,3 4,0 1350	1095-1110 1175-1205 0 - 1,0	250	6,4	100 250 340-380	min. 7,9 6,3-6,5 =2,0	1050 750 1000	11,3-11,4 13,1-13,2 11,8-12,0

Torque-control travel
on fl. weight assembly dimension a = 0,7 mmSpeed regulation: At 1095-1110 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		Control rod travel mm 7
LDA 750	1,0 bar 222,0-226,0 (219,0-229,0)		-	LDA 650	1,0 bar 214,0-220,0 (211,0-223,0)	100	225,0-245,0
LDA 1050	1,0 bar 184,0-190,0 (181,0-193,0)			LDA 500	0 bar 107,0-111,0 (104,0-114,0)		

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PES 6 P.. LS 388 with RQ..PA 452	0,34	1,0 0 0,61	13,1-13,2 9,4-9,5 10,5-10,6 12,1-12,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,8 n 7
2. Edition

En

PES 4 A 90 D 410 RS 2570 RSV 350-1200 A 2 B 1147 L

supersedes 8.81

company Daimler-Benz

engine OM 314 A

63 kW (86 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,25-2,35}{(2,2-2,4)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,8+0,1	6,4 - 6,5	0,2(0,25)			
350	8,9-9,1	0,7 - 1,3	0,2(0,25)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	approx 25	350	7,5	1200	11,8+0,1
approx 52	x = 5,75						350	7,9-8,1	900	12,2+0,2
⑤	10,5	1240-1250					605-665=2,0mm		600	12,6+0,1
	4,0	1320-1350								
	1475	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9	
1200	63,5 - 64,5 (61,5 - 66,5)	1240-1250 *	600	57,0-59,0 (55,0 - 61,0)	100	80,0-90,0 at 16,8- 17,2 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 EIC 2,9 b

2. Edition

En

Testoil-ISO 4113

PES 3 A 90 D 320 RS 2626

RSV 300-1075 A 1 B 2146 R

 supersedes 10.81
 company Eicher
 engine EDL 3-5
 49 kW (67 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing Δ Crustroke (2,15-2,35) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1075	12,4+0,1	8,3 - 8,4	0,2(0,45)			
300	6,9-7,1	0,9 - 1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	approx. 27	300	6,5	1075	12,4+0,1
approx. 60	X =	5,0					100	min. 19,0	870	12,8+0,2
⑤	11,4	1115-1125					300	6,9-7,1	500	13,4+0,1
	4,0	1160-1190								
	1330	0,3 - 1,7					385-445 = 2,0mm			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				mm RW		Control rod travel mm	
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	8	9
1	2		4	5	6	7			
1075	83,0 - 84,0 (81,0 - 86,0)	1115-1125*	500	83,0 - 86,0 (81,0 - 88,0)	100	19,0-21,0			

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.82

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 11,6 K 2

1. Edition

En

PE 6 P 120 A 320 RS 372 - 1 y RSV 250-1100 P 5/458 R

supersedes -

company DAF

engine DKX 1160

243 kW (330 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8 - 2,9$ mm (from BDC)
(2,75-2,95)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
850	11,4+0,1	20,4 - 20,8	0,5 (0,9)			
250	6,2-6,4	1,1 - 1,5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	Control rod travel
1	2	mm	4	5	mm	7	8	mm	10	mm
loose	800	0,3 - 1,0	-	-	-	approx. 24	250	5,8	400	11,6+0,1
approx. 54	x =	5,0					100	min. 19,5	300	11,8+0,5
⑤	10,4	1140-1150					250	6,2-6,4		
	4,0	1265-1295					620-680	= 2,0		
	1425	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel	mm
1	2	3	4	5	6	7	8	9	
LDA	0,7 bar	1140-1150*	LDA	0 bar	100	315,0-355,0	-	-	
850	204,0-208,0 (201,0-211,0)		600	139,0-143,0 (136,0-146,0)		at 19,5 - 21,0 mm RW			

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 372-1y with ..P5/458 R	0,37	0,70 0 0,30	11,0-11,1 11,4-11,5 10,0-10,1 10,4-10,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 FOR 5,9 d

2. Edition

En

PES 6 A 90 D 210 RS 2628 RSV 325-1200 AOB 2140 L

supersedes 5.82

company: Ford

engine: Dover 363 T/C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,7-2,8
(2,65-2,85)At port closing the locating pin must engage
mm (from BDC) in the slot of the pointer.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1175	11,5+0,1	8,4 - 8,5	0,3(0,45)			
350	5,1-5,3	0,5 - 1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	approx 38	350	4,7	-	-
approx 67	X =	4,0					100	min. 19,0		
⑤	10,5	1240-1250					350	5,1-5,3		
	4,0	1375-1405					490-5	50= 2,0		
	1540	0,3 - 1,7					625	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	5	4	5	6	7	8	9
LDA	0,7 bar	1240-1250 *	LDA	0 bar	100	76,0 - 90,0	-	-	-
1175	83,5-84,5 (81,5-86,5)		500	49,0 - 51,0 (47,0 - 53,0)		at 19,0-21,0 mm · RW			

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1175 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A .. RS 2628 with .. AOB 2140 L	0,7	0 0,48 0,30	11,5 - 11,6 10,1 - 10,2 11,1 - 11,2 10,4 - 10,6

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 FOR 5,9 £

1. Edition

En

PES 6 A 90 D 210 RS 2629

RSV 350-1300 AOB 2142 L

supersedes -

company: Ford

engine Dover 363

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,7-2,8$ mm (from BDC) At port closing the locating pin must engage in the slot of the pointer.
(2,65-2,85)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	11,7+0,1	5,9 - 6,0	0,3(0,45)			
350	7,2-7,4	0,7 - 1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	approx 40	350	6,8	1250	11,7+0,1
approx 71	X =	3,5					100	min. 19,0	700	11,9+0,1
⑤	10,7	1370-1380					350	7,2-7,4		
	4,0	1515-1545					580-640	= 2,0		
	1680	0,3-1,7					700	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1250	58,5-59,5 (56,5-61,5)	1370-1380 *	1000	51,0 - 55,0 (49,0 - 57,0)	100	76,0-90,0 at 19,0-21,0 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

BOSCH

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Testoil-00 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 FOR 5,9 f 1

1. Edition

En

PES 6 A 90 D 210 RS 2629

RSV 350-1300 A 0 B 2138 L

supersedes -

company Ford

engine 380

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,7-2,8
(2,65-2,85)

mm (from BDC)

At port closing the locating pin must engage
in the slot of the pointer.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	12,9+0,1	7,2-7,3	0,3(0,45)			
350	6,4-6,5	0,9-1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	approx 34	350	6,0	-	-
	x =	2,75					100	min.19,0		
approx 68 ⑤	11,9	1365-1375					350	6,4-6,6		
	4,0	1505-1535					515-575	= 2,0		
	1670	0,3-1,7					650	max.1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2		4	5	6	7	8	9	
1250	72,0-73,0 (70,0-75,0)	1365-1375*	900	62,5-66,5 (60,5-68,5)	100	76,0-90,0 at 19,0 - 21,0 mm RW	-	-	
			600	51,0-57,0 (49,0-59,0)					

Checking values in brackets

* 1 mm less control rod travel than coi 2

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001 STE 10,0 d 1

2. Edition

En

Testoil-ISO 4113

PE 6 P 110 A 320 RS 157 RQV 250-550/1150 PA 140 R

supersedes 5.81

company Steyr

7 FA

engine 235 kW (320 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,00 - 2,10$ mm (from BDC) at $RW = 9,0 - 12,0$ mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	12,7	17,7 - 17,9	0,4(0,8)			
250	5,9-6,1	1,3 - 1,9	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
	1150	15,2-17,8	ca. 48	4,0	625-655	approx. 10	100 250	min. 7,5 5,9-6,1	250 650	0,9-1,0 7,4-8,5
approx. 66	11,7 4,0 1450	1190-1200 1245-1275 0 - 1,0				3a	390-450 = 2,0		1200	8,9

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1150	0,9 bar 177,0 - 179,0 (174,0 - 182,0)	1190-1200*	LDA 1150	0 bar 133,0-137,0 (130,0-140,0)	100	190 - 210	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

D5

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
 increasing
 XXXXXXXX

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
157 with 140 R	0,51	0,90 0,40 0	12,7 - 12,8 12,2 - 12,3 11,3 - 11,5 11,0 - 11,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 x 1

4. Edition

En

PES 6 A 90 D 410 RS 2293

RQV 300-1400 AB 1138 L

superseded 82

company Daimler-Benz

engine

OM 352 A

124 kW (169 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,1 - 2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1375	11,3+0,1	7,5 - 7,6	0,3(0,45)			
300	7,6-7,8	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1500	16,0-19,4	-	-	-	approx. 15	100 300	min. 9,2 7,6-7,8	250 600 1000 1400	0,9-1,1 3,1-3,4 5,5-5,7 8,2
approx. 61	10,3 4,0 1650	1435-1445 1550-1580 0 - 1,0				350-475				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) 2		Rotational-speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1375	0,7 bar 75,0-76,0 (73,0-78,0)	1435-1445 *	LDA 500	0 bar 56,0-58,0 (54,0-60,0)	100	14,3-14,7 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

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D7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1 375 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A..RS 2293 with..AB 1138 L	0,7		11,3 - 11,4
		0	11,0 - 11,1
		0,28	11,1 - 11,2

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full load control rod travel)

①

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 UNI 9, 6 a

2. Edition

En

Testoil-ISO 4113

PES 6 P 110 A 720 RS 3105

RQV 275-1150 PA 642

supersedes 1.82

company: IVECO-UNIC

engine: 8220-02

176 kW (240 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{3,2-3,3}
 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,0+0,1	12,7 - 12,9	0,4(0,8)			
275	5,5-5,7	1,4 - 2,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1190	15,2-17,5	-	-	-	approx 11	100 275	min. 7,1 5,5-5,7	225 535 840 1150	0,4-0,7 3,5-3,9 5,3-5,5 8,0
approx. 61	11,0 4,0 1450	1190-1200 1285-1315 0 - 1,0				280-375				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②	Fuel delivery characteristics high idle speed ⑤		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1190-1200 *	LDA	0 bar	100	170,0-190,0	-	-
1150	127,0 - 129,0 (124,0 - 132,0)		400	81,0 - 83,0 (78,0 - 86,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2
9.82
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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..RS3105 with .. PA 642	0,19	0,7 0 0,14	11,5-11,6 12,0-12,1 10,1-10,2 10,5-10,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 x

5. Edition

En

PES 6 A 90 D 410 RS 2293

RQV 300-1400 AB 1140 L

RQV 300-1400 AB 1141 L

RQV 300-1400 AB 1142 L

supersede 6.82

company: Daimler-Benz

engine: OM 352 A

124,0 kW (169 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,15-2,25}
(2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1375	11,3+0,1	7,5 - 7,6	0,3(0,45)			
300	7,6-7,8	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

.. AB 1140 L, .. AB 1141 L, .. AB 1142 L

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1500	16,0-19,4	-	-	-	approx. 15	100 300	min. 9,2 7,6-7,8	250 600 950 1400	0,9-1,1 3,1-3,4 5,3-5,5 8,2
approx. 61	9,8 4,0 1650	1435-1445 1550-1580 0 - 1,0			350-475					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤ travel Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
LDA 1375	0,7 bar 75,0-76,0 (73,0-78,0)	1435-1445 *	LDA 500	0 bar 56,0-58,0 (54,0-60,0)	100	14,3-14,7 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

8.82

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D11

Testbench ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1375 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6A..RS2293 ..AB1140L with ..AB1141L ..AB1142L	0,7	0 0,28	11,3 - 11,4 11,0 - 11,1 11,1 - 11,2

Notes

(1) when n =

rev/min and
gauge pressure =

bar (maximum full load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4

3. Edition

En

PE 6 P 120 A 320 RS 363 RQV 200-1000 PA 391 R

supersedes 1.80

company AEC

engine TL 12/41

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,4 - 3,5$ mm (from BDC)
($3,35 - 3,55$)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	13,6+0,1	23,4-23,8	0,5 (0,8)			
200	7,1-7,3	2,5-3,1	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1090	15,2-17,8	-	-	-	approx. 25	100 min. 8,8 200 7,1-7,3 290-350 = 2,0	min. 8,8 7,1-7,3 2,0	150 430 720 1000	0,6-0,8 3,8-4,0 5,2-5,4 7,5
approx. 60	12,6 4,0 1300	1040-1050 1150-1180 0 - 1,0				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5a		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1000	0,9 bar 234,0-238,0 (231,0-241,0)	1040-1050*	LDA 700	0,9 bar 199,0-205,0 (196,0-208,0)	100	280,0-320,0	-	-
			LDA 500	0 bar 141,0-145,0 (138,0-148,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement		Control rod travel - diminution difference mm (1)
	Gauge pressure = bar	Gauge pressure = bar		
PE6P..RS363 with ..PA391R	0,52	0,9		13,6 - 13,7
		0		11,8 - 11,9
				13,2 - 13,3
		0,45		12,4 - 12,6

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 v 8

3. Edition

En

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2596 RQV 300-1400 AB 1151 L

supersedes 10.81

company: Daimler-Benz

engine: OM 352 A

124 kW (169 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $2,00-2,10$
 $1,95-2,15$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,5+0,1	7,7 - 7,8	0,3(0,45)			
300	7,9-8,1	0,9 - 1,5	0,2(0,4)			
600	11,5+0,1		0,4(0,55)			
450	10,2+0,1	C, Sp. 4 u. 5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	approx. 24	100 300	min. 9,5 7,9-8,1	250 630 1020 1400	0,7-0,9 3,8-3,9 5,3-5,4 7,7
approx. 61	10,5 4,0 1700	1440-1450 1560-1590 0-1,0				350-500 ③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b)	Fuel delivery characteristics high idle speed (5a)		Starting fuel delivery idle switching point (6)	Torque-control travel (5)		
rev/min	cm³/1000 strokes	rev/min (4a)	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1400	0,7 bar 77,0 - 78,0 (75,0 - 80,0)	1440-1450*	LDA 600	0,7 bar 63,0 - 65,0 (61,0 - 67,0)	100	73,0 - 83,0	-	-
			LDA 450	0 bar 42,0 - 44,0 (40,0 - 46,0)		bei 14,8- 15,2 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

8,82

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D15

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 A..RS 2596 with ..AB 1151 L	0,29	0,70 0 0,18	11,5 - 11,6 10,2 - 10,3 11,1 - 11,2 10,6 - 10,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 8,1 b

1. Edition

En

PES 6 A 90 D 410 RS 2502

RQV 425-1100 AB 1153 .L

supersedes

company OM

engine: 8365.05.520

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15-2,25$
($2,10-2,30$) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	11,9+0,1	7,8 - 7,9	0,3(0,45)			
425	8,0-8,2	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1140	15,2-17,8	-	-	-	approx. 16	100	min. 9,5	400	0,8-1,0
approx 65	10,9	1140-1150					425	8,0-8,2	630	4,3-4,5
	4,0	1220-1250					725	max. 1,0	870	5,8-6,0
	1350	0 - 1,0							1100	8,0

Torque control travel a = 0,3 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1100	77,5-78,5 (75,5-80,5)	1140-1150*	650	75,0-78,0 (73,0-80,0)	100	128,0-148,0 at 18,2 - 18,6 mm RW	1100	11,9+0,1	
							500	12,2+0,1	
							760	12,1+0,2	
							880	11,9+0,3	

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

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D17

217

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 a 3

3. Edition

En

Testoil-ISO 4113

PE 6 P 120 A 720 RS 167 Z

ROV 225-1100 PA 17.7 R

supersedes 2.81

company: Fiat

engine: 8210.02

154,5 kW (210 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke (1,95-2,15)
 2,00-2,10 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,3 +0,1	17,5 - 17,9	0,5(0,9)			
225	7,5-7,7	1,7 - 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	approx. 13	100 225	min. 9,0 7,5-7,7	225 400 1100	0,9-1,0 2,4-2,6 8,4
approx. 62	9,3 4,0 1350	1140-1150 1190-1220 0 - 1,0				285-400 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	175,0-179,0 (172,0-182,0)	1140-1150*			100 225	min. 16 mm RW 17,0-23,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

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①

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 FIA 13,8 c 1

2. Edition

En

Testoil-ISO 4113

PE 6 P 120 A 720 RS 214 Z

RQV 425-1050 PA 438 R

supersedes 81

company Unic.- IVECO

engine 8215.02.542

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke (1,95-2,15)
 2,00-2,10 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	9,8-9,9	17,2 - 17,6	0,5(0,9)			
425	6,0-6,2	1,7 - 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1130	15,2-17,8				approx. 18	100	min 7,6	400	0,2-0,6
	8,8	1090-1100					425	6,0-6,2	620	4,1-4,9
approx. 62	4,0	1175-1205							830	6,0-6,2
	1350	0 - 1,0				430-525			1050	7,7
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1050	172,0-176,0 (169,0-179,0)	1090-1100*			100	19,5-21,0 mm RW		
					425	17,0-23,0 Electromagnet 24V		

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.32

Test Specifications Fuel Injection Pumps and Governors

PE 8 A 95 D 410 LS 2608 RQV 300-1100 AB 1126 L

Testoil-ISO 4113

supersedes

company

engine

KHD

F8L413F

133 kW (181 PS)
at 2200 min⁻¹1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 je 45° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(1,95-2,15)
2,00-2,10

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	8,4-8,5	7,3 - 7,5	0,3(0,6)			
300	5,9-6,1	0,9 - 1,9	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8				approx. 14	100 300	min. 7,5 5,9-6,1		
approx. 42	7,4 4,0 1350	1140-1150 1185-1215 0 - 1,0				375-425				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm +0,2
1100	72,5 - 74,5 (70,5 - 76,5)	1140-1150*	725	89,0 - 92,0 (87,0 - 94,0)	100	120,0-130,0	1100 975 825 725	8,4 8,7 9,6 10,0
					100-220(80-240)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 9,6 i

1. Edition

En

Testoil-ISO 4113

PE 6 A 95 D 410 LS 2621 RQ 300/1250 AB 1148 L

1 - 6 - 5 - 4 - 3 - 2

0 -75 -120-195-240-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes =

company KHD

F6L413F

engine 125 kW (170 PS)
at 2500 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,0 - 2,1
(1,95 - 2,15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,6-9,7	8,3 - 8,5	0,3 (0,6)			
300	6,9-7,1	1,6 - 2,2	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		Test specifications rev/min 6		Control rod travel mm 8		Test specifications rev/min 9		Control rod travel mm 12	
550	19,2-20,8	550	20,0	8,6 4,0	1295-1310 1325-1355	300	7,0	100 300 345-385 450	min. 8,5 6,9-7,1 2,0 max. 1,0	1250 550 910 990	9,6- 9,7 10,1-10,2 9,9-10,1 9,6- 9,9

Torque-control travel

on flyweight assembly dimension a =

= 0,25

mm

Speed regulation At

1295-1310 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes / mm 7	
1250	82,5 - 84,5 (80,5 - 86,5)	600		800	85,0 - 88,0 (83,0 - 90,0)	100	119,0 - 129,0
				1000	84,0-87,0 (82,0-89,0)		

Checking values in brackets

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 12,7 i

1. Edition
En

PE 8 A 95 D 410 LS 2451 RQ 300/1150 AB 1074 L

supersedes

company: KHD

engine: F8L 413 F
173 kW (235 PS)
at 2300 min⁻¹1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 je 45° \pm 0,5° (\pm 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,0-2,1}{(1,95-2,15)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,3-9,4	8,6-8,8	0,3 (0,6)			
300	5,9-6,1	1,4-2,4	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Test specifications Control rod travel mm 4				Test specifications Control rod travel mm 10				Control rod travel mm 12	
600	15,6-16,4	600	16,0	8,3 4,0 1325	1195-1210 1120-1250 0-1,0	300	6,0	100 300 350-390 450	min.7,5 5,9-6,1 = 2,0 max.1,0	1150 550 875 1000	9,3-9,4 9,7-9,8 9,6-9,8 9,3-9,6

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation. At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes / mm 7	
1150	86,0-88,0 (84,0-90,0)	600		100 700 400	86,5-89,5 (84,5-91,5) 86,5-89,5 (84,5-91,5) max. 84,5 (max. 86,5)	100	116,5-126,5

Checking values in brackets

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 v 12

1. Edition

En

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2596 RSV 350-1200 AOB 1148 L

supersedes

company: Daimler-Benz

engine: OM 352 A

110 kW (150 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,0-2,1} (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,2+0,1	7,4 - 7,5	0,3(0,45)			
350	8,1-8,3	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	approx. 27			1200	12,2-12,3
approx. 62 ⑤	x = 5,0						100	min. 19,0	600	13,2-13,3
							350	8,1-8,3	950	12,6-12,9
	11,2	1240-1250					500-560	= 2,0		
	4,0	1385-1415								
	1500	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 1200	0,7 bar 74,0-75,0 (72,0-77,0)	1240-1250*	LDA 600	0,7 bar 73,0-75,0 (71,0-77,0)	100	78,0-88,0 bei 16,1- 16,5 mm RW	-	-	
			LDA 500	0 bar 52,0-53,0 (50,0-55,0)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PES 6 A..RS 2596 with ..AOB 1148 L	0,45	0,70 0 0,24	13,2 - 13,3 11,5 - 11,6 12,8 - 12,9 12,0 - 12,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 RAB 9,7a

1. Edition

En

PES 6 A 95 D 410 RS 2108 W RQ 200/1100 AB 647 L

supersedes RABA

company: D 2356 HM6, HMX06

engine:

Testo: ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,65-1,85) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	12,0+0,1	12,1-12,3	0,3(0,6)			
200	7,4-7,6	0,9-1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		④		⑤		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	11,0	1145-1160	200	7,5	100	min. 8,9	1100	12,0-12,1
	VH= max. 46°			4,0	1195-1225			200	7,4-7,6	600	12,0-12,2
								380-420	= 2 mm		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1145-1160 min

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	4	5	6	7	
1100	121,0-123,0 (119,0-125,0)	-		500	max. 118,5 (max. 120,5)	100	min. 18,0 mm RW

Checking values in brackets

8.82

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 6,2 1

2. Edition

En

Testoil-ISO 4113

PE 6 A 85 D 320 RS2546

RQ 250/1200 AB1023R

 superseded **5.79**
 company **D A F**
 engine **DD 615**

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\begin{matrix} 2,15-2,25 \\ (2,10-2,30) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,5-9,6	4,8 - 5,0	0,3(0,45)			
250	5,9-6,1	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
550	19,2-20,8	550	20,0	8,5	1245-1260	250	6,0	100	min.7,5	-	-
				4,0	1310-1340			250	5,9-6,1		
VH	max. = 46°			1450	0 - 1,0			305-345	=2,0		
								450	0 - 1		

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At $1245 - 1260 \text{ min}^{-1}$ 1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery idle speed rev/min 6 cm ³ /1000 strokes / mm 7	
1000	49,0 - 50,0 (47,0 - 52,0)						

Checking values in brackets

9.82

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 9,7 n

2. Edition

En

PES 6 A 95 D 410 RS 2128 RQ 200/1100 AB 860 DL

supersedes

 company RABA, Daewoo
 D 2156 MTN 6
 engine 188 kW (256 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{1,95-2,05}
 (1,9 - 2,1) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,3+0,1	12,7 - 12,9	0,3(0,6)			
200	5,9-6,1	0,9 - 1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check ①		Full load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	11,3 4,0	1145-1160 1195-1225	200	6,0	100 200 310	min. 7,4 5,9-6,1 -350=2,0	100 600 1015 1070	12,3-12,4 12,8-12,9 12,6-12,8 12,3-12,6

 Torque-control travel on flyweight assembly dimension a = 0,2 mm
 Speed regulation: At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
LDA 1100	0,7 bar 126,5-128,5 (124,5-130,5)	200	LDA 800 LDA 500	0,7 bar 128,0-131,0 (126,0-133,0) 0 bar 80,5-84,5 (78,5-86,5)	100	151,5 - 161,5 bei 16,2-16,8 mm RW

Checking values in brackets

8.82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A..RS 2128 with ..AB 860 DL	0,25	0,70	12,8 - 12,9
		0	10,1 - 10,3
			12,1 - 12,2
		0,17	10,8 - 11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 8,3 c 4

1. Edition

En

PE 6 A 90 D 410 RS 2124

RQ 300/1250 AB 812 DL

supersedes

company Daimler-Benz

engine OM 360

141 kW (192 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,2+0,1	8,6 - 8,7	0,3 (0,45)			
300	6,3-6,5	1,2 - 1,8	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	9,2 4,0	1295-1310 1345-1375	300	6,4	100 300 370-410 = 2,0 500 max.1,0	min.7,9 6,3-6,5	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation Δ 1295-1310 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
1250	86,0-87,0 (84,0-89,0)	-	800	82,0-85,0 (80,0-87,0)	100	19,0-21,0 mm RW

Checking values in brackets

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,4 b

2. Edition

En

PES 6 A 95 D 410 LS 2639

RQ 250/1100 AB 1123-1L

superseded 5.82

company MAN

engine D 2566 MUH/200
147 kW (200 PS)

Testoil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{1,7 - 1,8}{(1,65 - 1,85)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,4+0,1	12,1 - 12,3	0,3 (0,6)			
250	5,9-6,1	0,9 - 1,5	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 4		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 8		Torque control rev/min 11	
600	15,6-16,4	600	16,0	11,5 4,0 1350	1145-1160 1245-1275 0 - 1,0	250	6,0	100 250 360-400 450	min. 7,4 5,9-6,1 = 2,0 max. 1,0	1100 600 845 900	12,5-12,6 13,4-13,5 13,1-13,3 12,6-12,9

Torque-control travel

on flyweight assembly dimension a =

mm

Speed regulation $1145 - 1160 \text{ min}^{-1}$ 1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes / mm 7
700	120,5-122,5 (118,5-124,5)	-		1100 500	122,5-125,5 (120,5-127,5) 119,5-123,5 (117,5-125,5)	100	130,0-140,0 bei 15,4-16,0 mm RW

Checking values in brackets

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 p 12

2. Edition

En

PES 6 A 95 D 410 LS 2542 RQ 250/1050 AB 1137 L

supersedes 5.82

company

MAN

engine

D 2566 M/MF
Gabun-LKW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(1,5-1,6)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,2+0,1	12,3-12,5	0,3 (0,6)			
250	6,7-6,9	0,9-1,5	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11 Control rod travel mm 12	
600	15,6-16,4	600	16,0	11,2 4,0 1300	1095-1110 1210-1240 0 - 1,0	250	6,8	100 250 385-475	min.8,2 6,7-6,8 25=2,0mm max.1,0	-	-

Torque-control travel

on flyweight assembly dimension a =

mm

Speed regulation 1095-1110 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery idle speed rev/min 6	
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes / mm 7
1050	123,0-125,0 (121,0-127,0)	-		500	106,5-111,5 (104,5-113,5)	100	125,0-135,0

Checking values in brackets

8.82

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 14,6 f
5. Edition

En

Testoil-ISO 4113

PE8P120A320LS3811

RQ 300/1150 PA 556

Values apply to

engine nozzle-and-holder assemblies 1 688 901 019
and engine fuel-injection tubing 1 680 750 067

supersedes 9.81
company Daimler-Benz
OM 422 A
engine 243 kW (330 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

^{4,0-4,1}
(3,95-5,15)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1150	10,4+0,1	16,2 - 16,4	0,4(0,8)			
300	5,0-5,2	1,4 - 2,2	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider		Full load speed regulation				Idle speed regulation				Torque control	
Control rod travel		Setting point		Test specifications		Setting point		Test specifications		Control rod travel	
rev/min	mm	rev/min	mm	rev/min	mm	rev/min	mm	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11	12
600	14,7-16,3	600	15,5	9,4	1195-1210	300	4,2	100	min.6,0	-	-
				4,0	1225-1255			300	4,1-4,2		
								340-380	2,0 mm		

Torque-control travel
on flyweight assembly dimension a

mm

Speed regulation At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever		Control rod stop		Fuel delivery characteristics		Starting fuel delivery	
Test oil temp 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /100 strokes
1	2	3	4	5	6	7	
1150	162,0 - 164,0 (159,0 - 16,0)	1195-1210*	600	152,0 - 158,0 (149,0 - 161,0)	100	125 - 145	

Checking values in brackets

10.82

BOSCH

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 8,3 m

2. Edition

En

Testoil-ISO 4113

PE 6 A 95 D 410 RS 2575 RSV 250...900 A 7 3 2060 DL

supersedes 11.79

company DAF

engine DU 825

See service Information VDT-I-DAF 004

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) Port closing difference between control-rod travel 9 and max. = 3,0-4,0°.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	10,5-10,6	5,2 - 5,4	0,3(0,6)			
250	8,4-8,6	0,9 - 1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever mm 1			Intermediate rated speed 4 5 6			4 Control lever deflection in degrees rev/min 7 8		Lower rated speed Control rod travel mm 9		3 Torque control rev/min 10 11	
loose	800	0,3-1,0				approx. 18	250	5,5		500	10,5-10,6
	X	= 4,0								300	11,3-11,5
approx. 53		940-950=9,5 945-975=4,0 1100= 0,3-1,7					250	5,9-6,1			
2a							290-350=2,0				

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8		4a Control rod travel mm 9	
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes RW 7				
900	51,5 - 53,5 (49,5 - 55,5)	940-950*				100	19,0-21,0	250	6,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

8.82

BOSCH

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E9

WPP 001745 MAN 9,2 n

2. Edition

En

supersedes 10.79

company **MAN**

engine D 2565 M/MR/MFR
(138,0KW-188PS)

Testoil-SO 4113

PES 5 A 95 D 410 LS 2543 Z RQ 250/1050 AB 1042 DL

$$1 - 3 - 5 - 4 - 2 \text{ je } 72^\circ \pm 0,5^\circ (\pm 0,75^\circ)$$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

A. Fuel Injection Pump Settings

Port closing at prestroke	1,50-1,60 (1,45-1,65)	mm (from BDC)
---------------------------	--------------------------	---------------

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,2-11,3	11,7 - 11,9	0,3(0,6)			
250	6,6-6,8	1,4 - 1,9	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider		Full load speed regulation		Idle speed regulation						Torque control	
	Control rod travel mm	Setting point	Control rod travel mm	Test specifications		Setting point	Control rod travel mm	Test specifications			Control rod travel mm
rev/min		rev/min		rev/min	Control rod travel mm	rev/min		rev/min	Control rod travel mm	rev/min	
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,2	1095-1110	250	6,7	100	min.8,2	1050	11,2-11,3
1250	0 - 1,0			4,0	1145-1175			250	6,6-6,8	910	11,3-11,6
								500	max.1,0	800	11,8-12,0
								470-510=2,0		600	12,0-12,1

Torque-control travel on flyweight assembly dimension a = 0,4 mm Speed regulation At 1095-1110 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /100 strokes 7
1050	116,5 - 118,5 (114,5 - 120,5)		750	114,5 - 117,5 (112,5 - 119,5)	100	149,0 - 159,0
			500	max. 116,5 (max. 118,5)		

Checking values in brackets

9.82

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 11,0 d

4. Edition

En

Testoil-ISO 4113

PE 6 P 110 A 320 LS 3805

RSV 650-1150 P 1/820

supersedes 2.82

company Daimler Benz

engine OM 421

155 kW (211 PS)

6 - 3 - 5 - 2 - 4 - 1
0 -45 -120-165-240-285° ± 0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

(3,95-4,15)
Port closing at prestroke 4,00-4,10 mm (from BDC) Σ 1. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	12,3+0,1	11,9 - 12,1	0,4(0,8)			
650	6,4-6,6	2,3 - 2,9	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control			
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9	10	11		
loose	800	0,3-1,0				ca.30	650	6.5	1130	12,3-12,4		
	X	= 4,0							600	12,3-12,5		
ca.57	1160-1170 = 11,3 1185-1205 = 4,0 1300= 0,3 - 1,7								650-715	=2,0		
2a												

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop		(6) Rotational-speed limit		(3a) Fuel delivery characteristics		Starting fuel delivery (5)		(4a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	Control rod travel mm 9
1130	119,0 - 121,0 (116,0 - 124,0)	1160-1170*	-	-	100	130 - 150	-	-	-

Checking values in brackets

Speed difference between 1.0 mm regulated and control-rod travel
4.0 mm at n = 25-35 min⁻¹

* 1 mm less control rod travel than col 2

10,82

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 HOR 2, 9b

1. Edition

Testoil-ISO 4113

PES 3 A 80 D 410/3 RS1313 EP/RSV 400-1250 AO B 1123 L

En

supersedes

company Holder

engine VD 310-8

1 - 2 - 3 $\pm 0,50^\circ$
0 - 120 - 240° ($\pm 0,75$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,70-1,80$ mm (from BDC) ^{RW 9}
 $(1,65-1,85)$

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1250	9,4-9,5	5,6 - 5,7	0,2(0,35)			
400	6,4-6,6	0,9 - 1,5	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

Port closing difference between control-rod travel 9 and max. = 9.0-9.9°.

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				approx. 22	400	6,0	-	-
approx. 49	x	= 4,0					100	min. 19		
	8,4	1290-1300					400	6,4-6,6		
	4,0	1315-1345					500-560	= 2,0		
2a	1500	0,3-1,7					650	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5 Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1250	56,5 - 57,5 (55,0 - 59,0)	1290-1300*							

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

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E12

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 MB 5,7w8

2. Edition

En

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2569 RSV 350-1300A0B 1140L

supersede 2.81

company Daimler Benz

engine OM 352

81 kW (110 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,20-2,40)
2,25-2,35 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1300	10,1 +0,1	5,3 - 5,4	0,3(0,45)			
350	8,6-8,8	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

* Set idle auxiliary spring at 2,0 mm.

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				aprox. 20	350	2,0*	1300	10,1-10,2
approx 61							350	8,6-8,8	1050	10,6-10,9
							630-690	= 2,0	500	11,3-11,4
②a		1340-1350=9,1 1435-1465=4,0 1550=0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1300	53,0 - 54,0 (51,0 - 56,0)	1340-1350*	500	45,0 - 47,0 (43,0 - 49,0)		100	78,0-88,0	350	8,7

Checking values in brackets

* 1 mm less control rod travel than col 2

8.82

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 HOR 2,0 b

3. Edition

En

PES 2 A 80D 410/3 RS 1329 RSV 400-1250 AOB 1123 L

 supersedes 3.80
 company Holder
 engine VD 6001/2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{1,7-1,8}{(1,65-1,85)}$ mm (from BDC) **RW 9 mm**

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,7-9,8	6,0-6,1	0,2 (0,35)			
400	6,4-6,6	1,0-1,6	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in

Port closing difference between control-rod travel 9 and max. = 9.0-9.9°.

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 22	400	6,0	-	-
	X = 3,75						100	min 19,0		
							400	6,4-6,6		
							495-555	2,0		
							600	max. 1,0		
⑤ ca. 48	9,0	1290-1300								
	4,0	1330-1360								
	1495	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑤ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm ³ /1000 strokes 2	3		4	5	6	7	8	9
1250	59,5-60,5 (58,0-62,0)	1290-1300*		-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,0 q

1. Edition

En

PE 6 P 120 A 320 LS 3815 RSV 650-1150 P1/820R

supersedes _

company Daimler-Benz

engine OM 421 A

206 kW (280 PS)

Values apply to
engine nozzle-and-holder assemblies 1 688 901 019
and engine fuel-injection tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 4,0 - 4,1 \\ (3,95 - 4,15) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	12,0+0,1	18,4 - 18,6	0,5(0,9)			
650	4,5-4,7	1,8 - 2,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	approx.	650	4,1	-	-
	X =	3,0					650	4,0-4,2		
approx. 54	11,0	1160-1170					655-715	= 2,0		
⑤	4,0	1185-1215						**		
	1300	0,3-1,7								

** Set idle auxiliary spring at 2,0 mm.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1130	184,0-186,0 (181,0-189,0)	1160-1170*	-	-	-	100	120,0-140,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.82

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 11,1 p 5

2. Edition

En

superseded 10.79

company MAN-SAVIEM

engine D2566 MSH

(177,0KW-241PS)

Testoil-ISO 4113

PES 6 A 95 D 410 LS 2542 RQ 250/1100 AB 1052 DL

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{1,50-1,60}
 (1,45-1,65) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	12,0-12,1	12,5 - 12,7	0,3(0,6)			
250	5,9-6,1	0,8 - 1,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider		Full load speed regulation				Idle speed regulation				Torque control	
Setting point		Test specifications		Test specifications		Test specifications		Test specifications		Test specifications	
Control rod travel rev/min mm	mm	Control rod travel rev/min mm	mm	Control rod travel rev/min mm	mm	Control rod travel rev/min mm	mm	Control rod travel rev/min mm	mm	Control rod travel rev/min mm	mm
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	11,0	1145-1160	250	6,0	100	min.7,5		
VH = max. 46°				4,0	1190-1220			250	5,9-6,1		
				1300	0 - 1,0			500	max.1,0		
								335-375=2,0			

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /100 strokes
1	2	3	4	5	6	7
1100	124,5 - 126,5 (122,5 - 128,5)		500	max. 113,5 (max. 115,5)	100	125,0 - 135,0 14,0-14,6 mm RW

Checking values in brackets

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BRE 9,6b
1. Edition

En

PE 6 P 110 A 320 RS 328

RQV 300-1500 PA 500

supersedes

company: Breda

engine: ID 32/6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	10,0+0,1	14,8-15,0	0,4(0,8)			
300	6,0-6,2	3,2- 3,8	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1440	15,2-17,8	-	-	-	ca.14	100	min.7,6	250	1,3-1,5
ca.63	9,0 4,0 1675	1540-1550 1610-1640 0- 1,0				330-440 ③a	300	6,0-6,2	670 1080 1500	3,7-3,9 5,7-5,8 9,1

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed ②b limitation intermediate speed rev/min ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min ④		Starting fuel delivery idle switching point ⑥ rev/min ⑥		Torque-control ⑤ travel rev/min ⑧		Control rod travel mm 9
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9	
1500	148,0-150,0 (145,0-153,0)	1540-1550*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.82

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps and Governors

WPP001/4 MB 5,7g¹

1. Edition

En

PES6A80D410 RS2085X

RSV350-1300A2B1005DL

supersedes

company Daimler-Benz

engine OM 352

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{2,15-2,25}
 (2,1-2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1290	8,1-8,2	3,9-4,0	0,2(0,35)			
350	7,9-8,1	1,9-2,2	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 X=4,25	-	-	-	ca. 20	350	7,5	1290	8,1-8,2
							100	min. 19,5	500	9,3-9,4
							350	7,9-8,1	800	8,6-8,8
⑤ ca. 50	7,1	1330-1340								
	4,0	1450-1480								
	1550	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	9	
1290	39,0-40,0 (37,5-41,5)	1330-1340*	800	37,0-39,0 (35,5-40,5)	100	78,5-88,5 14,6- 15,0mm RW	-	-	
			500	36,0-38,0 (34,5-39,5)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 5,7 x 5

1. Edition

En

PES 6 A 90 D 410 RS 2596

RSV 350-1400 AOB 2099 L

supersedes

company Daimler-Benz

engine C.1 352 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,0 - 2,1
(1,95-2,15)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1380	12,6+0,1	7,8 - 7,9	0,3(0,45)			
350	8,2-8,4	0,5 - 1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	ca.22	350	8,3	1380	12,6+0,1
	X =	2,0					470	1,9-2,1	500	13,5+0,1
									1150	13,1+0,3
⑤ ca.53	11,6	1420-1430								
	4,0	1480-1510								
	1550	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	3	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1380	77,5-78,5 (75,5-80,5)	1420-1430*		800	78,0-80,0 (76,0-82,0)	100	100,0-110,0 78,8- 18,2 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 PEN7,0 c 1
1. Edition

En

PE6P100A320RS291Z RSV200-1200P1/305R

supersedes _

company: Volvo-Penta

engine: D 70 B/PP

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
700	8,5-8,6	5,6-5,8	0,3(0,6)			
225	5,8-6,0	1,0-1,4	0,25(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca.22	225	5,4	-	-
	X=5,0						100	min.20,0		
ca.64							225	5,3-5,5		
⑤	7,5	1240-1250					280-330	=2,0		
	4,0	1300-1330								
	1400	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	7	6	7	8	9
700	56,0-58,0 (54,0-60,0)	1240-1250*	-	-	-	100	210,0-260,0 20,0- 21,0mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 11,1 p 10

En

2. Edition

Testoil-ISO 4113

PES 6 A 95 D 410 LS 2542 RSV 250-1100 A1B 1124

supersedes 5.81

company RVI-Saviem

engine MAN D2566 MSFV

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{1,5 - 1,6}{(1,45-1,65)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	11,3 - 11,5	0,3(0,6)			
250	5,9-6,1	0,9 - 1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 23	250	5,5	1100	11,7-11,8
	X =	4,75					100	min. 19,5	500	12,2+0,1
							250	5,9-6,1	915	11,9+0,2
							365-425	2,0		
⑤ ca. 60	10,7	1140-1150								
	4,0	1185-1215								
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1100	112,5-114,5 (110,5-116,5)	1140-1150*	700	102,5-105,5 (100,5-107,5)	100	121,5-131,5 15,2- 16,0 mm RW	-	-	
			500	max. 106,5 (max. 108,5)					

Checking values in brackets

* 1 mm less control rod travel than col 2

10.82

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 8,3 i 1

4. Edition

En

Testoil-ISO 4113

PE 6 A 90 D 410 RS 2524

RSV 250-1200 A 5 B 2012 DL

supersedes 10.81

** Cold start test on EP/RSV governor according
to Service Information.

company DAF

engine DH 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,25-2,45) Port closing difference between control-
rod travel 9 and max. = 4,5 - 5,5°
2,30-2,40 RW 9 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9,4-9,5	7,0 - 7,1	0,3(0,45)			
250	6,5-6,7	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca.16	250	5,5	1000	9,4-9,5
	X	3,0					250	5,9-5,1	400	9,4-9,6
									300	9,5+0,5
⑤ ca. 49	1240-1250 = 8,4					580-640				
	1260-1290 = 4,0									
	1480 = 0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1000	70,0 - 71,0 (68,0 - 73,0)	1240-1250*	-	-	-	100	19,0-21,0 **	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 PER 5,8 c 4

1. Edition

En

VE 6/12 F 1300 L 21-2
0 460 426 013

Nozzle-and-holder assembly company PERKINS
1 688 901 020 (172 + 3 bar) engine: T6.354.4

supersedes...

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,45 mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot speed rev/min	Settings	Charge-air press bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	600	2,5-2,9 mm	0,66	
1.2 Supply pump pressure	600	3,8-4,4 bar (kgf/cm ²)	0,66	
1.3 Full-load delivery without charge-air pressure	1000	78,5-82,5 cm ³ /1000 strokes	0	2,5 (3,0)
Full-load delivery with charge-air pressure	1000	92,5-93,5 cm ³ /1000 strokes	0,66	
1.4 Idle speed regulation	270	8,0-12,0 cm ³ /1000 strokes	0	2,5(3,0)
1.5 Start	100	min. 78,0 cm ³ /1000 strokes	0	
1.6 Full-load speed regulation	1480	42,0-50,0 cm ³ /1000 strokes	0,66	
1.7 Load-dependent start of delivery	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,66 bar	n = rev/min mm	400 0,7-1,5 (0,4-1,8)	600 (2,0-3,4)	800 3,8-4,6 (3,5-4,9)
2.2 Supply pump LDA=0,66 bar	n = rev/min bar (kgf/cm ²)	300 3,0-3,6	1300 6,0-6,6	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111 (40-126)	1300 55-111 (40-126)	

2.3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	1550 1480 1300 1000 1000 *700 500	max. 9,0 (42,0-50,0) 86,5-89,5 (85,7-90,3) (78,2-82,8) (90,7-95,3) 84,5-88,5 (84,2-88,8) 68,5-72,5 (67,5-73,5)	0,66 0,66 0,66 0 0,66 0,32 0
switch-off	1300	0	
Idle stop	330-420	0	
	270	(6,0-14,0)	
End stop	150 230	min. 78 max. 78	
2.4 Solenoid	max. cut-in voltage test voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,2-5,4
MS	1,1-1,3
SVS	max. 6,0
XK	21,8-23,8
XL	12,4-15,7
B	

Observations

* Manifold-pressure
compensator stroke
= 4,0 mm.
Correction at the
adjusting nut.(46)

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWV 1,5c

2. Edition

En

VE 4/9 F 2000 R 25
R 25 P

supersedes 4.82
company VWV
engine EA 086

0 460 494 010
0 460 494 011

Overflow Temperature 45°C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings	Rot speed rev/min	Settings	Charge-air press bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	3,4 - 3,8 mm		
1 2 Supply pump pressure	1500	4,0 - 4,6 bar (kgf/cm ²)		
1 3 Full-load delivery without charge-air pressure	1500	29,5 - 30,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery with charge-air pressure	--	-- cm ³ /1000 strokes		
1 4 Idle speed regulation	415	6,0 - 10,0 cm ³ /1000 strokes		2,5(3,0)
1 5 Start	100	min. 38,0 cm ³ /1000 strokes		
1 6 Full-load speed regulation	2050	8,0 - 14,0 cm ³ /1000 strokes		
1 7 Load-dependent start of delivery	--	--		

2. Test Specifications checking values in brackets ()

2 1 Timing device	n = rev/min mm	1000 1,3-2,1(1,0-2,4)	1500 (2,9-4,3)	1800 4,6-5,4(4,3-5,7)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,3-1,9		2000 5,4-6,0
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138(40-153)		2000 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2060-2160 2050 2030 2000 1500 600	0 (7,0-15,0) 17,5-24,5 (17,0-25,0) 25,0-27,0 (29,7-28,3) (27,7-32,3) 18,0-21,0 (16,5-22,5)	
switch-off elect.	400	bei 2,5 V 0	
Idle stop	700 415	max. 2,0 (4,0-12,0)	
End stop	400 500	min. 13,5 max. 19,5	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max. 3,6
* FH	1,8-2,4
A	9,0-14,0
B	10,4-15,6

Observations

* *operating
stroke (KSB)

2 4 Solenoid max cut-in voltage XXX min. 10 V
rated voltage 12V.

BOSCH

Geschäftsbereich KH Kundendienst Kfz Austria
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10.8

E24

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWV 1,5d

2. Edition

En

VE 4/9 F 1800 R 25-1
R 25-1 P

0 460 494 012
0 460 494 013

Overflow temperature 45°C

supersedes 4.82
company VWV
engine EA 086

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/.

Pre-stroke setting -- mm

1. Settings

	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	3,4 - 3,8 mm		
1 2 Supply pump pressure	1500	4,0 - 4,6 bar (kgf/cm ²)		
1 3 Full-load delivery without charge-air pressure	1500	29,5 - 30,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery with charge-air pressure	--	-- cm ³ /1000 strokes		
1 4 Idle speed regulation	415	6,0 - 10,0 cm ³ /1000 strokes		2,5(3,0)
1 5 Start	100	min. 33,0 cm ³ /1000 strokes		
1 6 Full-load speed regulation	1900	6,0 - 12,0 cm ³ /1000 strokes		
1 7 Load-dependent start of delivery	--	--		

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	1000 1,3-2,1(1,0-2,4)	1500 (2,9-4,3)	1800 4,6-5,4(4,3-5,7)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,3-1,9		1800 4,8-5,4
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138(40-153)		1800 55-138(40-153)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1920-2040	0	
	1900	(5,0-13,0)	
	1850	22,5-29,5 (22,0-30,0)	
	1800	27,5-29,5 (26,2-30,8)	
	1500	(27,7-32,3)	
	600	18,0-21,0 (16,5-22,5)	
switch-off elect.	400	bei 2,5 V 0	
Idle stop	700 415	(4,0-12,0)	
End stop	400 500	min. 13,5 max. 19,5	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-14,
SVS	max. 3,6
* FH	1,8-2,4
A	9,0-14,0
B	10,4-15,6

Observations

* *operating
stroke (KSB)

2 4 Solenoid max cut-in voltage xxx min. 10 V
rated voltage 12V.

BOSCH

Vertriebsgesellschaft für Kraftfahrzeuge, Kfz-Ausrüstung
Bosch GmbH, Postfach 10 15 50, D-7000 Stuttgart 1, Germany. Printed in the Federal Republic of Germany.

10.82

Testoil-ISO 4113

F1

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWV 1,6t
2. Ausgabe

En

VE 4/9 F 2100 R 48-2 (P)

0 460 494 102; 103 Overflow temperature 45°C

supersedes 6.82
company: VWV
engine: Typ 2 USA

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings	Charge-air press bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,3-3,7 mm		
1.2 Supply pump pressure	1500	4,8-5,4 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	1500	33,0-34,0 cm ³ /1000 strokes		2,5 (3,0)
Full-load delivery with charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle speed regulation	415	6,0-10,0 cm ³ /1000 strokes		2,5 (3,0)
1.5 Start	100	min. 38,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	2300	11,5-17,5 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,2-2,0 (0,9-2,3)	1500 (2,8-4,2)	2100 5,4-6,2 (5,1-6,5)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,1-2,7		2100 6,3-6,9
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)		2100 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2450-2550 2400 2300 2100 1500 600	0 max. 5,5 (10,5-18,5) 27,0-29,0 (25,7-30,3) (31,2-35,8) 21,5-24,5 (20,0-26,0)	
switch-off elect.	400	0	
Idle stop	2000 450 415	max. 3,0 min. 2,0 (4,0-12,0)	
End stop	400 470	min. 17 max. 23	

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max. 4,8
+ FH	1,8-2,4
XK	18,6-20,6
. XL	7,5-10,8
A	
B	

Observations

+ *operating
stroke (KSB)

2.4 Solenoid

max. cut-in voltage
XXXXXXXXXXXXX
test voltage

xxx min. 10,0 V
rated voltage 12V.

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 VWV 2,3a

3. Edition

En

VE 6/10 F 2250 L 36 (P)

0 460 406 005; 006

superseded 6.82

company: VW

engine: 087 LT

Overflow temperature 45°C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	2000	3,1 - 3,5 mm		
1 2 Supply pump pressure	2000	6,4 - 7,0 bar (kgf/cm ²)		
1 3 Full-load delivery without charge-air pressure	1500	28,5 - 29,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery with charge-air pressure	--	- cm ³ /1000 strokes		
1 4 Idle speed regulation	350	10,0 - 14,0 cm ³ /1000 strokes		2,5(3,0)
1 5 Start	100	min. 43,0 cm ³ /1000 strokes		
1 6 Full-load speed regulation	2525	6,0 - 12,0 cm ³ /1000 strokes		
1 7 Load-dependent start of delivery	--	-		

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	1500 0,9-1,7(0,6-2,0)	2000 (2,6-4,0)	2250 3,8-4,6(3,5-4,9)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,7-3,3		2250 7,1-7,7
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138(40-153)		2250 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)	Designation for assembly and adjustment mm
End stop	2725 2525 2250 1500 750	max. 3,0 (5,0-13,0) 24,0-26,0 (22,7-27,3) (26,7-31,3) 26,5-29,5 (25,0-31,0)		K KF MS SVS max. 4,5
switch-off				XK XL 20,1-22,1 8,9-12,6
elect.	400	0		
Idle stop	400 350	2,0-8,0 (1,0-9,0) (8,0-16,0)		Observations
End stop	400 500	min. 21 max. 26		

3. Dimensions

2 4 Solenoid	max. cut-in voltage xxx min. 10,0 V rated voltage 12V.
--------------	---

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 VWV 1,6u
3. Edition

En

VE 4/9 F 2100 R 48
0 460 494 039

Overflow temperature 45°C

superseded by 6.82
company VWV
engine EA 162/1,6

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,3-3,7 mm		
1.2 Supply pump pressure	1500	4,8-5,4 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	1500	33,0-34,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery with charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle speed regulation	415	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Start	100	min. 38,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	2300	11,5-17,5 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,2-2,0(0,9-2,3)	1500 (2,8-4,2)	2100 5,4-6,2(5,1-6,5)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,1-2,7		2100 6,3-6,9
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138(40-153)		2100 55-138(40-153)
2.3 Fuel deliveries	Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2450-2550 2400 2300 2100 1500 600	0 max. 5,5 (10,5-18,5) 27,0-29,0 (25,7-30,3) (31,2-35,8) 21,5-24,5 (20,0-26,0)		
switch-off elect.	400	0		
Idle stop	2000 450 415	max. 3,0 min. 2,0 (4,0-12,0)		
End stop	400 500	min. 17 max. 23		
4 Solenoid	max. cut-in voltage xxx min. 10,0 V rated voltage 12V.			
3. Dimensions				
Designation				for assembly and adjustment mm
K				3,2-3,4
KF				5,7-5,9
MS				1,3-1,5
SVS				max. 4,8
+ FH				1,8-2,4
A XK				18,6-20,6
B XL				7,5-10,8
Observations				
+ *operating stroke (KSB)				

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VW 2,3b1

2. Edition

En

VE 6/10 F 2400 L 32

0 460 406 003

superseded 4.82

company VW

engine 087/10

Overflow temperature 45°C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/

1. Settings

	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	2,8 - 3,2 mm		
1 2 Supply pump pressure	1500	5,2 - 5,8 bar (kgf/cm ²)		
1 3 Full-load delivery without charge-air pressure	1500	28,5 - 29,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery with charge-air pressure	--	- cm ³ /1000 strokes		
1 4 Idle speed regulation	350	10,0 - 14,0 cm ³ /1000 strokes		2,5(3,0)
1 5 Start	100	min. 42,0 cm ³ /1000 strokes		
1 6 Full-load speed regulation	2600	15,0 - 22,0 cm ³ /1000 strokes		
1 7 Load-dependent start of delivery	--	-		

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	1000 0,8-1,6(0,5-1,9)	1500 (2,3-3,7)	2400 6,0-6,8(5,7-7,1)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,8-3,4		2400 7,7-8,3
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138(40-153)		2400 55-138(40-153)

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700 2600 2400 1500 750	6,0-12,0 (14,5-22,5) 22,0-24,0 (20,7-25,3) (26,7-31,3) 26,0-29,0 (24,5-30,5)	
switch-off	2400	0	
Idle stop	400 350	3,0-9,0 (8,0-16,0)	
End stop	400 500	min. 20,0 max. 25,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,4-6,6
MS	1,4-1,6
SVS	max. 3,0
XK	18,5-20,5
XL	9,2-12,9

Observations

2 4 Solenoid

max. cut-in voltage xxx min. 10,0 V
test voltage xxx rated voltage 12V

Testoil-ISO 4113

BOSCH

Geschäftsbereich KH Kundendienst Kfz Ausüstung
14300 Robert Bosch GmbH Postfach 50 D 7000 Stuttgart 1 Printed in the Federal Republic of Germany
Importeur für die Bundesrepublik Deutschland: Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1

10.82

F5

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 1,6 d

4. Edition

En

VE 4/9 F 2400 R 66-8

O 460 494 077

Overflow temperature 45°C

supersedes 7.82

company VWW

engine 1,6 l Rabbit

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting -- mm

see VDT-W-46C/

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,9-3,3 mm		
1.2 Supply pump pressure	1500	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	1500	30,0-31,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery with charge-air pressure	--	- cm ³ /1000 strokes		
1.4 Idle speed regulation	415	7,0-11,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Start	100	min. 38,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	2600	11,0-17,0 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	--	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,3-2,1(1,0-2,4)	1500 (2,4-3,8)	2400 6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,1-2,7		2400 7,0-7,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138(40-123)		2400 55-138(40-123)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700 2600 2400 1500 600	2,5-9,5 (2,0-10,0) (10,0-18,0) 26,0-28,0 (24,7-29,3) (28,2-32,8) 17,5-20,5 (16,0-22,0)	
switch-off elect.	400	0	
Idle stop	1200 600 415	max. 5,0 max. 6,0 (5,0-13,0)	
End stop	400 500	min. 13,5 max. 19,5	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max. 2,5
*FH	1,8-2,4
XK	18,4-20,4
XL	10,5-13,8

Observations

* *operating
stroke (KSB)

2.4 Solenoid max. cut-in voltage xxx min. 10,0 V
rated voltage 12V.

BOSCH

Geschäftsbereich Kfz Kundendienst, Kfz Ausrustung
1400 by Robert Bosch GmbH, Postfach 50 00 00, Stuttgart 1, Printed in the Federal Republic of Germany.

9.82

F6

Test Specifications

Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWV 1,5e

2. Edition

En

VE 4/9 F 1500 R 25-2

0 460 494 017

0 460 494 018

Overflow temperature 45°C

supersedes 4.82

company VWV

engine EA 086

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-450/

1. Settings

	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,4 - 3,8 mm		
1.2 Supply pump pressure	1500	5,1 - 5,7 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	1000	27,5 - 28,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery with charge-air pressure	--	- cm ³ /1000 strokes		
1.4 Idle speed regulation	415	6,0 - 10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Start	100	min. 38,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	1560	19,0 - 25,0 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	--	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,3-2,1(1,0-2,4)	1500 (2,9-4,3)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,4-3,0	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138(40-153)	1500 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1595-1640	0	
	1560	(18,0-26,0)	
	1500	29,0-31,0 (27,7-32,3)	
	1000	(25,7-30,3)	
	600	22,5-25,5 (21,0-27,0)	
switch-off elect.	400	bei 2,5 V 0	
Idle stop	700	max. 2,0	
	415	(4,0-12,0)	
End stop	400	min. 18,0	
	500	max. 24,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max. 3,6
* FH	1,8-2,4
A	9,0-14,0
B	10,4-15,6

Observations

* *operating
stroke (KSB)

2.4 Solenoid

max. cut-in voltage xxx min. 10 V
rated voltage 12V.

BOSCH

Geschäftsbereich Kfz Kundendienst Kfz Ausrüstung
1980, by Robert Bosch GmbH, Postfach 50 00, D-7000 Stuttgart 1, Germany

10.82

F7

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7w3

3. Edition

En

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2569 RSV 350 - 1275 A0 B 1138 L

supersedes 2-81
company Daimler-Benz
engine OM 352
62 kW (84 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

(2,20-2,40)

Port closing at prestroke 2,25-2,35 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	8,4-8,5	4,0 - 4,1	0,3(0,25)			
350	7,7-7,9	0,8 - 1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control lever deflection in degrees 7			③ Torque control Control rod travel rev/min mm	
	Control rod travel mm 2	Control rod travel mm rev/min 3					rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				approx 35	350	7,3	1250	8,4-8,5
	x = 6,0						350	7,7-7,9	500	9,7-9,8
approx 72							670-730	2,0	785	9,0-9,2
②a	1290-1300 = 7,4 1405-1435 = 4,0 1545 = 0,3 - 1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		⑥ Rotational speed limit Note changed to) rev/min 3		③a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		④a Idle stop Control rod travel mm 9	
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7	rev/min 8	
1250	40,5 - 41,5 (38,5 - 43,5)	1290-1300*	750	39,5 - 41,5 (37,5 - 43,5)		100	80,0-90,0	350	8,5
			600	37,0 - 39,0 (35,0 - 41,0)			RW 15,8-16,2 mm		

Checking values in brackets

* 1 mm less control rod travel than col 2

8.82

BOSCH

Geschäftsbereich KM-Kundendienst, Kfz-Ausrüstung
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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 3,8n1

4. Edition

En

Testoil-ISO 4113

PES 4 A 90 D 410 RS 2570

RSV 350-1300 A 2 B 1126 DL

supersedes 8.80
company Daimler-Benz
engine OM 314
55 kW (75 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,20-2,40)
2,25-2,35 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1300	9,9-10,0	5,2 - 5,4	0,3(0,45)			
350	8,7-8,9	1,2 - 1,8	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				approx. 20	350	8,3	1300	9,9-10,0
approx. 51	X	= 4,0					350	8,7-8,9	1050	10,3-10,6
2a	1340-1350=8,9						575-635=2,0		600	11,2-11,4
	1420-1450=4,0								450	11,6-11,7
	1600=0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1300	52,5 - 54,5 (50,5 - 56,5)	1340-1350*		600	50,0 - 52,0 (48,0 - 54,0)	100	80,0-90,0 16,3 16,7 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.82

BOSCH

Geschäftsbereich KH Kundendienst Kfz Ausrüstung
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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 11,4 h

3. Edition

En

Testoil-ISO 4113

PES 6 P 110 A 820 LS 422

RQ 300/1100 PA 327-1

supersedes 8.81
company Daimler-Benz
OM 407
engine 147 kW (200 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,95-3,15)
3,00-3,10

mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,6-9,7	10,30 - 10,50	0,4(0,8)			
300	7,0-7,2	1,3 - 1,9	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11 Control rod travel mm 12	
600	13,0-14,0	600	13,5	8,6	1145-1160	300	6,1	100	min.7,5	-	-
				4,0	1175-1205			300	6,0-6,2		
								350-390	=2,0		

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation. At

1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /-1000 strokes 2				cm ³ /-1000 strokes 5		cm ³ /1000 strokes / mm 7	Control rod travel
1100	103,0 - 105,0 (100,0 - 108,0)			500	78,0 - 82,0 (75,0 - 85,0)	100	130,0 - 150,0

Checking values in brackets

10.82

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 5,7 y

1. Edition

En

PES 6 A 90 D 410 RS 2293 RQ 900 AB 1079 L

supersedes -

company Daimler-Benz

engine OM 352 A

82 kW (111 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	10,8+0,1	6,9 - 7,0	0,3(0,45)			
300	5,9-6,1	0,9 - 1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		④		⑤		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	9,8 4,0 1000	905-910 940-950 0 - 1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a = mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm Control rod travel 7
850	69,0-70,0 (67,0-72,0)	-		-	-	100	73,0-83,0 bei 14,6-15,0 mm RW

Checking values in brackets

10.82

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7v4

2. Edition

En

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2569

RQV 300-1450 AB 1114 L

superseded 0.80

company Daimler-Benz

OM 352

engine 81 kW (110 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke (2,20-2,40) mm (from BDC) RW 10,5
 2,25-2,35

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1450	9,2-9,3	4,4 - 4,5	0,3(0,45)			
300	8,4-8,6	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1450	15,2-17,8				approx. 25	100	min. 10,0	250	0,7-0,9
approx. 63	8,5 4,0 1700	1490-1500 1565-1595 0 - 1,0				③a	300	8,4-8,6	650	3,8-4,0
							550-610	=2,0	1500	8.4

Torque control travel a = 1,1 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥	Torque-control travel ⑤		
rev/min	cm ³ /1000 strokes	rev/min ④a	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9 + 0, 1
1450	44,5 - 45,5 (42,5 - 47,5)	1490-1500*	500	34,5 - 37,5 (32,5 - 39,5)	100	73,0-83,0 at 15,4 - 15,8 mm RW	1450 1130 760 500	9,2 9,4 9,9 10,3
					100-220	(80-240)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.82

BOSCH

 Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP001/4 KHD 4,7 b

1. Edition

En

PES 5 A 80 D 410/3 RS 2579 RQV 300-1400 AB 1048 DL

1-3-5-4-2 je $72^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes -

company KHD

engine F 5 L 912

47 kW (64 PS)
at 2800 min

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke

1,9-2,0
(1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,4+0,	6,1-6,2	0,2(0,35)			
300	8,9-9,	1,0-1,6	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1400	15,2-17,8	-	-	-	approx. 10	100 300 750	min. 7,5 5,9-6,1 max. 1,0	250 630 1020 1400	0-0,6 2,9-3,1 5,0-5,3 5,9
approx. 60	10,4 4,0 1850	1480-1490 1710-1740 0-1,0				390-490				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	62,5-63,5 (61,0-65,0)	1480-1490*	900 750	59,5-61,5 (57,5-63,5) 56,5-58,5 (55,0-60,0)	100	120,0-130,0 at 20,5-21,5 mmRW	1400 1075 825 500	11,4+0,1 11,5+0,3 12,0+0,2 12,4+0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

9.82

①

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP C01/4 MWM 8,8 a 1

1. Edition

En

PE 8 A 100 D 320 RS 3009

RQV 750 AB 995 R

supersedes

company MWM

engine: D, TD 232 V 8

1 - 8 - 5 - 4 - 7 - 2 - 3 - 6

0 -30 -90 -120-180-210-270-300° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{2,0 - 2,1}{(1,95 - 2,15)}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
710	9,6-9,7	9,0 - 9,2	0,3 (0,6)			
300	6,6-6,8	1,5 - 2,1	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
approx. 22	8,0 4,0 825	750-755 780-790 0 - 1,0	-	-	-	-	-	-	650 700 750 800 824	0,6 2,7 5,0 8,0 11,0
						3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
710	90,0-92,0 (88,0-94,0)		-	-	100	15,7-16,3 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.82

BOSCH

 Geschäftsbereich KM Kundendienst Kfz-Ausrüstung
 c/o Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany
 Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 6,1 K 2

1. Edition

En

PES 6 A 85 D 410 RS 2592 RQV 300-1250 AB 1158 L

supersedes

company: KHD

engine: BF 6 L 913

GMC-Fahrzeug

118 kW (160 PS)

bei 2500 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,2-2,3}
(2,15-2,35) mm (from BDC) at 9,0-12,0 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,5+0,1	8,5-8,6	0,3 (0,45)			
300	8,3-8,5	1,0-1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1290	15,2-17,8	-	-	-	approx 17	100 300	min.10,2 8,3-8,5	250 580 920 1250	0,5-0,8 3,6-3,7 5,3-5,4 8,1
approx. 66	11,5 4,0 1500	1290-1300 1375-1405 0 - 1,0				450-575				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1290-1300*	LDA	0,7 bar	100	108,5-118,5	1250	12,5+0,1
1250	84,5-85,5 (82,5-87,5)		800	84,5-87,5 (82,5-89,5)		at 19,0- 21,0 mm RW	500	13,2+0,1
			LDA	0 bar			800	13,2+0,1
			500	59,0-60,0 (57,0-62,0)			1000	12,9+0,2
							1100	12,7+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

BOSCH

Geschäftsbereich KM Kundendienst Kfz-Ausrüstung
C by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

Test Specifications

Fuel Injection Pumps and Governors

WPP 001/4 DAF 6,2 1 1

1. Edition

En

PE 6 A 85 D 320 RS 2546

RSV 250-900 A 7 B 2061 R

supersedes -

company DAF

engine DD 615

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test oil-ISO 4113

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC) RW 9 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	10,5+0,1	6,0-6,1	0,3(0,45)			
250	7,4-7,6	1,0-1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .
 Port closing difference between control-rod travel 9
and max. = 3,0-4,0°.

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	.	ca. 19	250	5,5	370	11,7-12,3
	x	= 4,0					250	5,9-6,1	650	10,5-10,6
⑤ ca. 53	9,5	940-950					290-350	= 2,0		
	4,0	945-975								
	1100	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...							
rev/min 1	cm³/1000 strokes 2	rev/min 3	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9		
900	60,0-61,0 (58,0-63,0)	940-950*	-	-	100	19,5-21,0 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors

40

NPP 001/4 MB 5,70

6. Edition

En

supersedes 2.82

company Daimler-Benz

engine OM 352 A

107 kW (145 PS)

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2293 Z RSV 575-1250 A 1 B 618 L

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30)
2,15-2,25 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	11,2+0,1	7,5 - 7,6	0,3(0,45)			
575	7,4-7,6	2,1 - 2,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
100se	800	0,3-1,0	-	-	-	ca.13	575	7,5	-	-
	x = 5,0						610	1,9-2,1		
							580-640	=2,0		
ca. 66 ⑤	1260-1270	= 10,2								
	1400	= 0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1230	74,5 - 75,5 (72,5 - 77,5)	1260-1270*	-	-	-	100	71,0-81,0 bei 13,8- 14,2 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Speed difference between 1.0 mm regulated and control-rod travel 4.0 mm at n = 25 - 35 min⁻¹.

10.82

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 5,7 v 6

3. Edition

En

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2569

RSV 575-1250 A 1 B 618 L supersedes 2.82

company Daimler Benz

engine OM 352

85 kW (115 PS)

1 - 5 - 3 - 6 - 2 - 4
0 - 60 - 120 - 180 - 240 - 300° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

(2,20-2,40)

Port closing at prestroke

2,25-2,35

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1230	12,0+0	6,2 - 6,3	0,3(0,45)			
575	8,4-8,6	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 28	575	6,5		
	X =	3,75					100	min. 19		
							650	0 - 1		
							575-635	= 2,0		
⑤ ca. 58	1250-1260	= 11,0								
	1275-1295	= 4,0								
	1435	= 0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1230	61,5 - 62,5 (59,5 - 64,5)	1250-1260*	-	-	-	100	80,0-90,0 17,1-17,5 mm RW	-	-

Checking values in brackets

Speed difference between 1.0 mm regulated and control-rod travel 4.0 mm at n = 25 - 35 min⁻¹.

* 1 mm less control rod travel than col 2

10.82

BOSCH

Geschäftsbereich KH, Kundendienst, Kfz-Ausrüstung
by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany
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F18

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 8,1 b 1

1. Edition

En

PES 6 A 90 D 410 RS 2502 RQV 300-1050 AB 1157 L

supersedes

company OM-Fiat

engine 8365.05.590
Schlepper

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15-2,25$
($2,10-2,30$) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,5+0,1	7,6 - 7,7	0,3(0,45)			
300	8,2-8,4	0,9 - 1,5	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1110	15,2-17,8	-	-	-	approx. 20	100	min. 9,8	250	1,0-1,2
approx. 64	10,5 4,0 1300	1090-1100 1170-1200 0 - 1,0					300	8,2-8,4	520	4,2-4,4
							335-440=	2,0	780	5,6-5,8
							675	max.1,0	1050	7,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1050	76,0-77,0 (74,0-79,0)	1090-1100*	650	73,0-76,0 (71,0-78,0)	100	128,0-148,0 at 18,2- 18,6 mm RW	1050 500 755 870	11,5+0,1 11,9+0,1 11,8+0,2 11,5+0,3

Checking values in brackets

* 1 mm less control rod travel than col 2

9.82

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 EIC 3,9 c

1. Edition

En

PES 4 A 90 D 320 RS 2634 RSV 300-1025 A 1 B 2153 R

1 - 2 - 4 - 3 je $90^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes

company Eicher

engine: EDL 4-2

65 kW (88 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,2 - 2,3
(2,15-2,35)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1025	12,6+0,1	8,1 - 8,2	0,2(0,45)			
300	10,9+0,2	4,4 - 4,9	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	approx 16	300	10,5	1025	12,6+0,1
approx	x =	2,0					100	min. 19,0	500	13,2+0,1
							300	10,9-11,1	880	12,9+0,2
46							395-455=2,0			
⑤	11,6	1065-1075								
	4,0	1070-1100								
	1255	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	rev/min	mm
1	2	3	4	5	6	7	8	9	
1025	81,0-82,0 (79,0-84,0)	1065-1075*	750	83,5-86,5 (81,5-88,5)	100	19,0-21,0 mm RW	-	-	
			500	77,0-79,0 (75,0-81,0)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 ALS 3,8a
2. Edition

En

PES 4 A 90 D 320 RS 2641

RSV 350-1200 A 2 B 2158 R

supersedes 6.82

company Alsthom-Atlant

engine -

50 kW (68 PS)

AGROM-N 4-72

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,5-2,6}{(2,45-2,65)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	8,4-8,5	5,4-5,5	0,3(0,45)			
350	5,9-6,1	0,9-1,5	0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	approx 17	350	5,5	1200	8,4+0,1
approx 44	X = 3,0						100	min. 19,0	450	8,9+0,2
							350	5,9-6,1	600	8,4+0,2
							395-455	2,0		
⑤	7,4	1240-1250					500	max. 1,0		
	4,0	1260-1290								
	1425	0,3 - 1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1200	54,0-55,0 (52,0-57,0)	1240-1250*	450	41,0-43,0 (39,0-45,0)	100	19,0-21,0 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.82

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 q 4

2. Edition

En

PES6A 90 D 410 RS 2293 RSV 350-1300 AOB 1101 DL

supersedes 8.81

company: Daimler-Benz

engine: OM 352 A

110 kW (150 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,15-2,25
(2,1-2,3)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1300	10,6+0,1	7,0 - 7,1	0,3(0,45)			
350	6,9-7,1	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	approx. 18	350	6,5	1300	0,6+0,1
approx. 55	x = 3,0						100		800	0,9+0,2
⑤	9,6	1340-1350					350	6,9-7,1	500	1,3+0,1
	4,0	1375-1405					465-525	2,0mm		
	1500	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1300	70,0 - 71,0 (68,0 - 73,0)	1340-1350*	500	62,0 - 64,0 (60,0 - 66,0)	100	80,0-90,0 at 14,6- 15,0 mm R/V			

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 4,7 c

1. Edition
En

PES 5 A 80 D 410/3 RS 2603 RS 325/1650 A 0 B 2087 L

supersedes

company: KHD

engine: F 5 L 912

63 kW (85 PS)₁
at 3300 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,9 - 2,0}{(1,85 - 2,05)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	9,9-10,0	5,1 - 5,2	0,2(0,35)			
325	8,7-8,9	1,7 - 2,1	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	approx. 18	325	8,8	-	-
approx. 49 ⑤	8,9 4,0 1900	1690-1700 1740-1770 0 - 1,0					100 325 550-590 600	min.13,6 8,7-8,9 =2,0 max.1,8		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1500	50,5-51,5 (49,0-53,0)	1690-1700*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 v 9

1. Edition

En

PES 6 A 90 D 410 RS 2596

RSV 350-750 AOB 741 L

supersedes

company Daimler-Benz

engine OM 352 A
65 kW (88 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0 - 2,1$ mm (from BDC)
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,0+0,1	6,6 - 6,7				
100	17,4+0,4	7,1 - 8,1				

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	500	0,3-1,0	-	-	-	approx. 14	350	8,1	-	-
approx. 26	x =						100	min. 19,0 **		
⑤	12,0 4,0 850	740-750 780-795 0,3-1,7					360-420	= 2,0		

Set auxiliary idle spring at 2.0 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
700	65,5-66,5 (63,5-68,5)	740-750*		-	-	100	71,0-81,0 bei 17,4- 17,8 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 SCA 11,0 u 4

3. Edition

En

PE 6 P 120 A 720 RS 7001 RSV 350-1100 P 1/481

supersedes 9.82

company Saab-Scania

engine DS 11

Values apply to

engine nozzle-and-holder assemblies 1 688 901 019

and engine fuel-injection tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ab FD 141: 5,0-5,1 mm (from BDC) bis FD 052: 4,4-4,5 mm (4,35-4,55)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	13,2±0,1	20,7 - 20,9	0,5(0,9)			3,3 ± 0,1
350	4,5-4,6	1,6 - 2,0	0,3(0,6)			(3,0 - 3,5)**

Adjust the fuel delivery from each outlet according to the values in

Test ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	ca. 25	350	4,0	-	-
	x = 5,5						100	min. 20,0		
ca. 58	12,2	1140-1150					350	4,5-4,6		
⑤	4,0	1195-1225					415-475	= 2,0		
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm	
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	8	9
1	2		4	5	6	7			
1000	207,0-209,0 (204,0-212,0)	1140-1150*	600	198,0-204,0 (195,0-207,0)	100	210,0-260,0 20,0 - 21,0 mm RW	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 2,9-3,1 mm.

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monnaie République Fédérale 14 Amalgam par Robert Bosch GmbH

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 g 8

1. Edition

En

PES 4 A 85 D 410/3 RS 2610 RSV 325-1150 A 8 B 2163 L

supersedes

company KHD

engine F 4 L 913

55 kW (75 PS)₁bei 2300 min⁻¹

Schlepper DX 80

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,5 - 2,6$
($2,45 - 2,65$) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	11,3+0,1	6,8 - 6,9	0,3(0,45)			
325	9,1-9,3	1,7 - 2,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	approx. 18	325	8,7	1150	11,3+0,1
	x = 4,5						100	min. 19,0	500	12,0+0,1
approx. 54	10,3	1190-1200					325	9,1-9,3	900	11,6+0,2
⑤	4,0	1245-1275					470-530	= 2,0		
	1400	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1150	68,0-69,0 (66,0-71,0)	1190-1200*		500	59,0-62,0 (57,0-64,0)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

10,82

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 o 1

2. Edition

En

PES 6 A 90 D 410 RS 2293 RSV 575-1250 A 1 B 618 L

supersedes 11.80

company Daimler-Benz

engine OM 352

88 kW (120 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	10,5+0,1	6,1-6,2	0,3(0,45)			
575	6,4-6,6	1,1-1,7	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 28	575	5,5	-	-
	x =	5,0					100	min.19,0		
⑤ ca.58	9,5	1250-1260					580-610	= 2,0		
	4,0	1275-1295					650	max.1,0		

 ** Set idle-speed auxiliary spring at 2,0 mm control-rod travel,
then 1/2 turn back.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9
1230	61,0-62,0 (59,0-64,0)	1250-1260*	-	-	100	14,7-15,3 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

9.82

①

2. Edition

En

RQV 250-1300 MW 30-1 .

company: Perkins

engine: V 8.640 V
160 kW (218 PS)

0 -45 -90 -135-180-225-270-315

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

$$\begin{array}{r} 3,00-3,10 \\ \hline (2,95-3,15) \end{array}$$

mm (from BDC) RW 9.0-12.0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,0+0,1	9,0 - 9,2	0,35(0,6)			
250	8,1-8,3	1,35-1,75	0,35(0,55)			
800	12,0+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel				
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm	(4)	Degree of deflection of control lever	rev/min	Control rod travel mm	(3)	rev/min	mm	(1)
1	2	3	(2a)	4	5	6		7	8	9		10	11	
max.	1300 1550	15,2-17,8 0 - 1,0		-	-	-		ca.14	250 100	8,1-8,3 min.9,6				
ca.64	11,0 4,0	1340-1350 1445-1475						270-600 (3a)						

Torque control travel a = _____ mm

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5) Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1300	90,0-92,0 (88,0-94,0)	1340-1350*	800	89,5-93,5 (87,5-95,5)	100	min. 140,0		
					100-180 (80-200)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

G4

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Com.-No.

... 116

Port closing and TDC markings

°camshaft between port closing and TDC

at control-rod travel 9,0 - 12,0 mm

15°

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 PER 10,0 n

1. Edition

En

PES 8 MW 100/720 RS 1106 RQV 250-1300 MW 30-1
0 403 448 117

supersedes

company Perkins

engine V 8.640 V
160 kW (218 PS)

Testoil-ISO 4113

1 - 8 - 7 - 5 - 4 - 3 - 6 - 2
0 -45 -90 -135-180-225-270-315

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,00-3,10}{(2,95-3,15)}$ mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	10,7+0,1	9,0 - 9,2	0,35(0,6)			
250	6,4-6,6	1,35-1,75	0,35(0,55)			
800	10,7+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	①a	Degree of deflection of control lever 4	rev/min mm 6	④	Degree of deflection of control lever 7	rev/min mm 9	③	rev/min mm 10 11
max.	1300 1550	15,2-17,8 0 - 1,0					ca.14	250 100 490-550 = 2,0	6,4-6,6 min.8,1	
ca.64	9,7 4,0	1340-1350 1425-1455					③a			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min	cm ³ /1000 strokes	rev/min ④a	rev/min	cm ³ /1000 strokes ⑤b	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1300	90,0-92,0 (88,0-94,0)	1340-1350*	800	89,5-93,5 (87,5-95,5)	100	min. 140		
					100-180 (80-200)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

Com.-No.

...117

Port closing and TDC markings

°camshaft between port closing and TDC

at control-rod travel 9,0 - 12,0 mm

15°

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9cl
3. Edition
En

Testoil-ISO 4113

VA 4/100 H 1250 CR 67-1
CR 67-1 P

0 460 304 193
0 460 304 194

supersedes 6.82

company IHC
engine D 239 TD 8 C

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Instructions and Test Equipment
VDI WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm \pm 0,04

Setting of the pointer at a stroke of 1 mm in relation to outlet A

1. Settings	rev/min	Settings	Charge air press kp/cm ²	Difference in delivery cm ³
1.1 Timing device travel	800	4,5-5,5 mm		
1.2 Supply pump pressure	800	5,2-5,7 kp/cm ²		
1.3 Full-load delivery without charge-air pressure	800	69,5-70,5 cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm ³ /1000 strokes		3,0
1.5 Start 196 bar	100	mind. 90,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	1330	31,0-39,0 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	200-330		
	mm	Beginn 400 800 1000 1100-1250		
		1,1-2,1(0,8-2,4) (4,2-5,8) 6,1-7,1(5,8-7,4) 6,9-7,6(6,6-7,9)		
2.2 Supply pump	rev/min	200 800 1250		
	kp/cm ²	2,1-2,6(1,9-2,8) (5,0-5,9) 7,0-7,5(6,8-7,7)		
Overflow delivery	rev/min	500 1250		
	cm ³ /10 s	55-100(40-110) 55-100(40-110)		

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge-air pressure kp/cm ²
End stop	Full	1370-1420 (1350-1440)	0	
		1330	(30,0-40,0)	
		1280-1300	Beginn	
		1250	66,0-69,0 (65,0-70,0)	
		800	(69,0-71,0)	
		500	71,0-74,0 (70,0-75,0)	
	Stop	1250	0	
Idle stop	Full	400-450	0	
		350	(11,5-19,5)	
		100	mind. 90,0	
End stop		220-300		

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^{\circ}$ $\beta = 40 \pm 8^{\circ}$ $\gamma = 30 \pm 8^{\circ}$ $\delta = 60 \pm 8^{\circ}$	Pump Dimension ∇ 1,8 mm Dimension ∇ 24,6 mm

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 15,8 g

1. Edition.

En

PE10P110A920/5 LS 3073 RQ300/1150PA535

supersedes -

company: BF10L413F
 engine: 265kW (360 PS)₁
 bei 2050 min⁻¹
 bzw. 259 kW (352 PS)₁
 bei 2300 min⁻¹
 (Maxidyne)

1-10- 9- 4- 3 - 6 - 5 - 8 - 7 - 2

0-27-72-99-144-171-216-243-288-315° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,6+0,1	13,8-14,0	0,4(0,8)			
300	6,9-7,1	1,8-2,4	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	19,2-20,9	700	20,0	9,7 4,0	1195-1205 1220-1250	300	7,0	100 300	min.8,5 6,9-7,1	1150 800 1020 1050	10,7-10,8 11,6-11,8 11,5-11,7 11,2-11,4
VH= max. 46°				1350	0-1,0			340-380	= 2,0		

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
LDA 800	0,9 bar 138,0-140,0 (135,0-143,0)		-	LDA 1150	0,9 bar 121,0-125,0 (118,0-128,0)	100	115,0-140,0
LDA 1025	0,9 bar 134,0-138,0 (131,0-141,0)			LDA 500	0 bar 85,0-89,0 (82,0-92,0)		

Checking values in brackets

9.82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE10P..LS3073 with . PA535	0,55	0,90	11,2-11,3
		0	11,6-11,7
		0,39	9,4-9,5
			10,1-10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 KHD 15,8 i

1. Edition

En

PE 10A 95D 610/4LS 2448

RQV 300-1250 AB 1105L

supersedes

company KHD

engine BF 10L 413 F

294 kW (400 PS)

bei 2500 min⁻¹

1-10-9 -4- 3 - 6 - 5 -8 - 7 - 2

0-27-72-99-144-171-216-243-288-315 ± 0,50° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke (1,75-1,95)
 1,80-1,91 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,3-11,4	11,4-11,6	0,3(0,6)			
300	6,1-6,3	1,1-1,7	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1300	15,2-17,8	-	-	-	ca. 13	100 300 675-735 = 2,0	min. 7,7 6,1-6,3	250 600 950 1250	0,5-0,8 2,9-3,2 4,8-5,1 7,6
ca. 65	10,3 4,0 1500	1290-1300 1360-1390 0 - 1,0				320-400 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel Control rod travel 9 +0,1	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
LDA 1250	0,8 bar 113,5-115,5 (111,5-117,5)	1290-1300*	LDA 900	0,8 bar 119,0-122,0	100	129,0-139,0	1250 1100	11,3 11,5
			LDA 1100	0,8 bar 116,0-121,0	100-220 (80-240)		900	11,6
			LDA 500	0 bar 68,0-71,0	Magnet 24 V			

Checking values in brackets

* 1 mm less control rod travel than col 2

Checking Page 2.

9.32

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
2448 with 105 L	0,8 bar	0,565 0,430 0	11,6 - 11,7 11,0 - 11,1 10,1 - 10,3 9,3 - 9,4

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Checking values

900 1/min 0,8 bar (117,0 - 124,0)

1100 1/min 0,8 bar (114,0 - 123,0)

500 1/min 0 bar (66,0 - 73,0)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 12,7c1

1. Edition

En

PE 8 MW 100/720 LS 1010
RQ 300/1250 MW 32
0 403 548 004

supersedes -
company KHD
engine BF 8 L 413 F
235 kW (320 PS)

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3
0 -45 -90 -135-180-225-270-315 ± 0,50 (0,75)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 3,10-3,20 \\ (3,05-3,25) \end{matrix}$ mm (from BDC) RW 9,0-12,0

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,2+0,1	13,0 - 13,2	0,35(0,6)			
300	6,4-6,6	1,25 - 1,65	0,35(0,55)			
850	12,7+0,1		0,5 (0,7)			
500	9,7+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	60	20,0	11,2	1295-1310	300	6,5	100	8,1	850	12,7+0,1
1500	0 - 1,0	VH = 46°	4,0	4,0	1345-1375			300	6,4-6,6	950	12,4+0,2
								375	415 = 2,0	1200	12,2+0,1
										1250	12,2+0,1

Torque-control travel

on flyweight assembly dimension a =

mm

Speed regulation: At

1295 - 1310 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
LDA 1250	0,7 bar 130,0-132,0 (128,0-134,0)		LDA 850	0,7 bar 130,5-134,5 (128,5-136,5)	100	136,5-146,5 (133,5-149,5)
			LDA 500	0 bar 84,5-86,5 (82,5-88,5)		

Checking values in brackets

9.82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution difference
			mm (1)
Ppe.LS1010 RQ..MW32	0,7 bar		12,7 - 12,8
		0,3	11,9 - 12,0
		0,23	10,4 - 10,6

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

WPP001/4 SCL 7,4a
1. Edition

En

PES6A95D41ORS2614

RSV325-1100A1B2177L

supersedes -

company:

Schlüter
SDMT 112 W6

engine:

Schlepper
110kW (150PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,75-1,95) mm (from BDC) bei 9,0-12,0mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,5+0,1	10,4-10,6	0,3(0,6)			
325	8,7-8,9	2,4- 3,0	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x=3,75	-	-	-	approx. 22	325	8,3	1100	12,5+0,1
approx. 55							100	min. 19,5	500	13,1+0,1
							325	8,7-8,9	825	12,7+0,2
⑤	11,5	1140-1150					545	605=2,0		
	4,0	1215-1245								
	1380	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery - idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm³/1000 strokes 2	3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 1100	0,7 bar 104,0-106,0 (102,0-108,0)	1140-1150*	LDA 700	0,7 bar 108,5-111,5 (106,5-113,5)	100	179,5-189,5 bei 19,5 - 21,0mm RW	-	-	
			LDA 500	0 bar 73,5-76,5 (71,5-78,5)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.82

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at $n =$ 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6A..RS2614 with .A1B2177L	0,35	0,70 0 0,16	12,4-12,5 13,1-13,2 11,0-11,1 11,5-11,7

Notes

(1) when $n =$ rev/min and gauge pressure = bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 9,6 h

1. Edition

En

PE 6 A 95 D 410 LS 2450 RQ 300/1250 AB 1046 DL

1 - 6 - 5 - 4 - 3 - 2
0 - 75 - 120 - 195 - 240 - 315° $\pm 0,5^\circ (\pm 0,75^\circ)$

supersedes -

company KHD

engine F 6 L 413 F

(1) 130 kW (176 PS)₁
bei 2500 min(2) 141 kW (192 PS)₁
bei 2500 min(3) 120 kW (163 PS)₁
bei 2500 min

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15)
2,00-2,10 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	9,5-9,6	8,5 - 8,8	0,3(0,6)			
300	5,9-6,1	0,9 - 1,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	8,5	1295-1310	300	6,0	100	min. 7,5	1250	9,5-9,6
				4,0	1335-1365			300	5,9-6,1	1080	9,6-9,9
								350-390	= 2,0	965	9,9-10,1
								450	max. 1,0	600	10,1-10,2

Torque-control travel
on flyweight assembly dimension a = 0,3 mm

Speed regulation At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	7
1250	85,0 - 87,5 (83,0 - 89,5)	600		1000	85,0 - 88,0 (83,0 - 90,0)	100	120,0 - 130,0
				700	86,5 - 89,5 (84,5 - 91,5)		

Checking values in brackets

9.82

Testoil-ISO 4113

B. Governor Settings

(2) KHD 9,6 h

- 2 -
(2)

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		②		④		⑤		③			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	8,9 4,0	1295-1310 1340-1370	300	6,0	100	min. 7,5	1250	9,9-10,0
								300	5,9-6,1	1080	10,0-10,3
								350	390=2,0	965	10,3-10,5
								450	max. 1,0	600	10,5-10,6

Torque control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation A 1295-1310 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	7
(2) 1250	91,5-93,5 (89,5-95,5)	600		1000	91,0-94,0 (89,0-96,0)	100	120,0-130,0
				700	91,5-94,5 (89,5-96,5)		

Checking values in brackets

Testoil-ISO 4113

(3)

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		②		④		⑤		③			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	8,0 4,0	1295-1310 1320-1350	300	6,0	100	min. 7,5	1250	9,0-9,1
								300	5,9-6,1	1080	9,1-9,4
								350-390	=2,0	965	9,4-9,6
								450	max. 1,0	600	9,6-9,7

Torque control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation A 1295-1310 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	7
(3) 1250	81,5-83,5 (79,5-85,5)	600		1000	77,5-81,5 (75,5-83,5)	100	120,0-130,0
				800	78,5-82,5 (76,5-84,5)		

En Checking values in brackets

②

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 DAF 6,2 k

6. Edition

En

PE 5 A 85 D 320 RS 2546

RQ 250/1300 AB 1023 R
EP/RSV 250-1300 A 1 B 2025 Rsupersedes 12.80
DAF
company DF 615
engine

See service Information VDT-I-DAF 004

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,15-2,25} (2,10-1,30) RW mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	10,4+0,1	5,5 - 5,6	0,3(0,45)			
250	8,1-8,3	1,5 - 2,0	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Port closing difference between control-rod travel 9 and max. = 3,0-4,0°.

Checking of slider		Full load speed regulation				Idle speed regulation				Torque control	
Setting point		Test specifications				Test specifications				Control rod travel	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
550	19,6-20,4	550	20,0	9,4	1345-1360	250	6,5	100	min. 9,7	-	-
	VH max. = 46°			4,0	1425-1455			250	8,1-8,3		
				1500	0 - 1,0			300-370	=2,0		
								400	max. 1,0		

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /100 strokes
1	2	3	4	5	6	7
1000	55,0-56,0 (53,0-58,0)				100	113,5-123,5 19,5-21,0 mm RW

Checking values in brackets

8.82

BOSCH

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
1980 by Robert Bosch GmbH, Postfach 50 D-7000 Stuttgart 1. Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

B. Governor Settings

EP/RSV..2025 R

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.21	250	5,5	1000 500 250	$\pm 0,1$
	X =	4,0								
ca.67	9,2	1340-1350					250	5,9-6,1		10,2
⑤	4,0	1380-1410					470	530=2,0		10,3
	1550	0,3 - 1,7								10,6

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min	cm ³ /1000 strokes	3	4	5	6	7	8	9
1	2							
1000	55,0-56,0 (53,0-58,0)	1340-1350*			100	113,5-123,5 19,5 21,0 mm		
			⑥a					

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
⑤										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min	cm ³ /1000 strokes	3	4	5	6	7	8	9
1	2							

Checking values in brackets

* 1 mm less control rod travel than col 2

①

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 VOL 6,0 g

6. Edition

En

PES 6 MW 100/320 RS 1004

supersedes 5.82

RQV 300 ... 1400 MW 6 R

company: Volvo

Komb. 0 403 446 104

engine: TD 60 B

1 - 5 - 3 - 6 - 2 - 4 = 0 - 60 - 120 - 180 - 240 - 300 \pm 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8 - 2,9}{(2,75 - 2,95)}$ mm (from BDC) bei RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,6 \pm 0,2	8,35 - 8,55	0,35(0,6)			
300	5,2-5,4	0,93 - 1,35	0,35(0,55)			
500			0,5 (0,7)			
1400			0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
approx. 68	1400 1700	15,2-17,8 0,0-1,0				8-16	100 300 420-480 = 2,0	mind. 7,0 5,2-5,4	1440 1450	= 8,2
64 \pm 4	10,7 4,0	1440-1450 1550-1580				③a			430 500 300	= 2,8 1,3-1,4

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery Idle switching point (6)	Torque-control travel (5) Control rod travel mm		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
LDA 1000	0,67 bar 83,5-85,5 (81,5-87,5)	1440-1450*	LDA 1400	0,67 bar 85,0-89,0 (83,0-91,0)	100 300	mind. 120 9,3-13,5 (7,0-16,0)		
			LDA 500	0 bar 48,0-50,0 (46,0-52,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

Testoil-ISO 4113

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G22

D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing
increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: ^{diminution} difference
			mm (1)
Ppe. RS1004 with MW 6 R	0,67		10,6 - 10,8
		0,21	9,7 - 9,9
		0,27	10,3 - 10,5

Notes

(1) when n =

rev/min and
gauge pressure

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 SCA 11,0u2

2. Edition

En

Testoil-ISO 4113

PE 6 P 120 A 720 RS 7001

RQ 250/1000 PA 615

supersedes 5.81

company Scania

engine DN 11

151 kW (205 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

* from FD 141: 5,0 - 5,1
Port closing at prestroke (4,95-5,15)

to FD 052: 4,4 - 4,5 mm
(4,35-4,55)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	11,3±0,1	18,6 - 18,7	0,5(0,9)			3,3 ± 0,1 **
250	4,0-4,2	0,9 - 1,3	0,5(0,8)			(3,0 - 3,5)

Adjust the fuel delivery from each outlet according to the values in

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 3,0 - 3,1 mm.

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,3 4,0	1045-1060 1105-1135	250	4,1	100 250 300-340=2,0mm	min. 5,6 4,0-4,2	-	-

Torque-control travel
on flyweight assembly dimension a

mm

Speed regulation: 1045 - 1060 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /100 strokes
1	2	3	4	5	6	7
1000	185,0 - 187,0 (182,0 - 190,0)	-	600	166,0 - 170,0 (163,0 - 173,0)	100	240,0 - 290,0 20-21 mm RW

Checking values in brackets

10.82

BOSCH

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G24

G24

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 UNI 9,6 a
3. Edition

En

PES6P110A720RS3105

RQV275-1150PA642

supersedes 8.82
company IVECO-UNIC
8220-22
engine 176 kW (239 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,2-3,3}
(3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,7+0,1	10,0-10,2	0,4(0,8)			
275	5,3-5,5	0,9- 1,5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1190	15,2-17,8	-	-	-	approx 11	100	min. 6,9	225	0,4-0,7
approx. 60	10,7 4,0 1400	1190-1200 1280-1310 0-1,0				280-375	275	5,3-5,5	535 840 1150	3,5-3,8 5,2-5,5 8,0

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b)	Fuel delivery characteristics high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm ³ /1000 strokes	rev/min (4a)	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1150	0,7 bar 100,0-102,0 (97,0-105,0)	1190-1200 *	LDA 400	0 bar 87,0-89,0 (84,0-92,0)	100	160,0-180,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.82

BOSCH

Geschäftsbereich KM Kundendienst Kfz-Ausrüstung
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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement		Control rod travel - diminution difference mm (1)
	Gauge pressure = bar	Gauge pressure =	bar	
PES6P..RS3105 with PA 642	0,23	0,70 0 0,21		11,3-11,4 11,7-11,8 10,5-10,6 10,8-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 9,7 n

3. Edition

En

PES 6 A 95 D 410 RS 2128

RQ 200/1100 AB 860 DL

supersedes 8.82

company RABA u. Dae Woo

engine D 2156 MTN 5

188 kW (256 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $1,95-2,05$
 $(1,90-2,10)$ mm (from BDC) at RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,3+0,1	12,7-12,9	0,3 (0,6)			
200	5,9-6,1	0,9-1,5	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10 rev/min 9		Torque control rev/min 11		Control rod travel mm 12	
600	19,2-20,8	600	20,0	11,3 4,0	1145-1160 1195-1225	200	6,0	100 200 310-350 = 2,0	min. 7,4 5,9-6,1	1100 600 1015 1070	12,3-12,4 12,8-12,9 12,6-12,8 12,3-12,6		

Torque-control travel
on flyweight assembly dimension a =

0,2

mm

Speed regulation At 1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel cm ³ /1000 strokes / mm 7	
LDA 1100	0,7 bar 126,5-128,5 (124,5-130,5)		200	LDA 800 LDA 500	0,7 bar 131,0-134,0 (129,0-136,0) 0 bar 81,5-85,5 (79,5-87,5)	100		151,5-161,5 bei 16,2-16,8 mm RW	

Checking values in brackets

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6A..RS2128 with .AB860DL	0,25		12,1 - 12,2
		0,70	12,8 - 12,9
		0	10,1 - 10,3
		0,17	10,8 - 11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4MB T2,8 e

5. Edition

En

PE 8 P 100 A 320 LS 810 RQ 300/1150 PA 187 R (1)
RQV300-1150 PA 227 R (2)
RQV350-1250 PA 251 R (3)

supersedes 4.80
company: Daimler-Benz
engine: OM 402
(3) 188 kW (256 PS)

1-8-7-2-6-3-5-4 je $45^\circ \pm 5^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,35-3,55) mm (from BDC) l_1 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes (1 u. 2) 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes (3) 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,3+0,1	10,0-10,2	0,3(0,6)	11,0+0,1	10,1-10,3	n = 1230
300	7,5-7,7	1,4-2,2	0,3(0,5)	7,8-8,0	1,5-2,1	n = 350

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 4 Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 8 Control rod travel mm 9 rev/min 10		Torque control rev/min 11 Control rod travel mm 12	
650	13,8-14,6	650	14,2	9,3 4,0 1400	1195-1210 1235-1265 0 - 1,0	300	7,5	100 300 405-445= 2,0	min.9,1 7,4-7,6	-	-

Torque-control travel
on flyweight assembly dimension a = mm

Speed regulation At 1195-1210 min

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /-1000 strokes	rev/min	cm ³ /1000 strokes/mm
1	2	3	4	5	6	7
1150	100,0-102,0 (98,0-104,0)	500	600	82,0-87,0 (80,0-89,0)	100	110,0-130,0

Checking values in brackets

10.82

Testoil-ISO 4113

B. Governor Settings

RQV..227 R (2)

MB 12,8 e

-2-

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 12	100	min.9,0	300	0,4-1,5
ca.62	9,3 4,0 1350	1190-1200 1260-1290 0 - 1,0				360-390	300	7,4-7,6	500 1000 1250	2,6-3,2 5,7-6,1 8,2

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	102,0-104,0 (100,0-106,0)	1190-1200*	600	82,0-87,0 (80,0-89,0)	100	110,0-130,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

RQV..PA 251 R (3)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1250	15,2-17,8	-	-	-	ca.20	100	min.8,5	1285	8,3
Ca.66	9,9 4,7 1500	1280-1290 1350-1380 0 - 1,0					350	6,9-7,1 710-770 = 2,0		

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1230	101,0-103,0 (99,0-105,0)	1280-1290*	1230	78,0-80,0 (76,0-82,0) **	100	110-130,0	-	-
**	Reduced-delivery stop				350	16,0-22,0 Change-over point. 100-270 (80-290)		

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 11,8f

3. Edition
En
Testoil-ISO 4113

PE 6 P 110 A 720 RS 371 RQ 300/1100 PA 424 R

 supersedes 4.80
 company Daimler Benz
 engine OM 355 A
 (207 kW) 280PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $2,80-2,90$
 $(2,75-2,95)$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	15,7 - 15,9	0,4(0,8)			
300	6,1-6,3	1,4 - 2,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		Test specifications rev/min 6		Control rod travel mm 8		Test specifications rev/min 9		Control rod travel mm 12	
650	19,2-20,8	650	20,0	10,7	1145-1160	300	6,2	100	min. 8,2	1100	11,7-11,8
1100	Abregel- beginn	VH ca. 30°	4,0		1195-1225			300	6,1-6,3	650	11,7-11,9
1350	0 - 1							375-415	= 2,0		

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes / mm 7	
LDA 1100	0,7 bar 157,0 - 159,0 (154,0 - 162,0)			LDA 1100	0 bar 142,0 - 144,0 (139,0 - 147,0)	100	140,0 - 160,0
						100-220 (80-240)	

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

MB 11,8f - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing
XXXXXXX

Pump/governor	Setting	Measurement	Control rod travel diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
371 with 424 R	0,70	0,39 0,35 0	11,7 - 11,8 11,5 - 11,6 11,2 - 11,3 11,0 - 11,1

Notes

(1) when n rev/min and gauge pressure = bar (- maximum full load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 11,6 i 7

1. Edition

En

PE 6 P 120 A 320 RS 372 - 1 y RQ 250/1100 PA 417 R

supersedes

company

engine

DAF

DK 1160

243 kW (330 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,75 - 2,95)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
850	11,4+0,1	20,4-20,8	0,5(0,9)			
250	6,2-6,4	1,1-1,5	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control					
①		Setting point		Test specifications		④		Setting point		Test specifications		⑤		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9	10	11	12				
700	15,6-16,4	700	16,0	10,4 4,0 1350	1135-1150 1200-1230 0-1,0	250	6,3	100 250 440	min.7,4 6,2-6,4 480=2,0	850 1100	11,4-11,5 11,3-11,5				

Torque-control travel

on flyweight assembly dimension a =

0

mm

Speed regulation: At

1135-1150 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	7
LDA 850	0,7 bar 204,0-208,0 (201,0-211,0)	-		LDA 600	0 bar 139,0-143,0 (136,0-146,0)	100	315,0-355,0 bei 19,5-21,0 mm RW

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P ..RS 372-1y with .. PA 417 R	0,37	0,70 0 0,3	11,4 - 11,5 10,0 - 10,1 11,0 - 11,1 10,5 - 10,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 v 10

1. Edition

En

PES 6 A 90 D 410 RS 2596

RQV 300-1400 AB 1120-1L

supersedes

company Daimler-Benz

engine OM 352 A

124 kW (169 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $2,0 - 2,1$ mm (from BDC)
 $(1,95 - 2,15)$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,9+0,1	7,4 - 7,5	0,3 (0,45)			
300	8,9-9,1	0,9 - 1,5	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4-113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	approx 19	100 300	min. 10,5 8,9-9,1	250 630 1020 1400	
approx. 63	10,9 4,0 1750	1440-1450 1570-1600 0 - 1,0				590-660 3a				

Torque control travel a = mm

Set stop at 3,0-3,5 mm control rod travel.

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1400	0,7 bar 73,5-74,5 (71,5-76,5)	1440-1450*	LDA 500	0,7 bar 68,5-70,5 (66,5-72,5)	100	71,0-81,0 15,8- 16,2 mm RW	1400 500 1000 1200	11,9+0,1 13,1+0,1 12,7+0,2 12,1+0,3
			LDA 500	0 bar 56,0-58,0 (54,0-60,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6A..RS2596 with..AB1120-1L	0,35	0,70 0 0,20	13,1 - 13,2 12,0 - 12,1 12,9 - 13,0 12,3 - 12,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 v

8. Edition

En

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2596

RQV 300-1400 AB 1066 DL

superseded 2.82

company Daimler-Benz

engine OM 352 A

124 kW (168 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{2,0-2,1}{(1,95-2,15)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,9+0,1	7,3 - 7,4	0,3(0,45)			
300	8,9-9,1	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	approx 19	100 300	min. 10,3 8,7-8,9	250 630 1020 1400	0,7-0,9 3,8-3,9 5,3-5,5 7,7
approx. 63	10,9 4,0 1750	1440-1450 1570-1600 0-1,0				560-620 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1400	0,7 bar 73,5 - 74,5 (71,5 - 76,5)	1440-1450*	LDA 500	0,7 bar 68,5 - 70,5 (66,5 - 72,5) LDA 500 0 bar 56,0 - 58,0 (54,0 - 60,0)	100	71,0 - 81,0 RW= 15,8-16,2 mm	1400 500 1000 1200	11,9+0,1 13,1+0,1 12,7+0,2 12,1+0,3
Set stop at 3,0-3,5 mm control rod travel.								

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 2596 with AB 1066 DL	0,7		13,1 - 13,2
		0,35	12,9 - 13,0
		0,20	12,3 - 12,5
		0	11,9 - 12,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 i
4. Edition

En

Testoil-ISO 4113

PE 6 P 110 A 320 RS372

RSV 250-1100 P 5/458R

supersedes 581
company DAF
engine DKTD 1160

See service Information VDT-I-DAF 004

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,80-2,90}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
850	12,0-12,1	13,6 - 13,8	0,4(0,8)			
250	6,6-6,8	0,7 - 1,1	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				aprox. 21	250	6,2	400	12,2-12,3
	X =	3,5							300	12,4-12,9
approx. 51		1140-1150 = 11,0					250	6,6-6,8		
		1275-1305 = 4,0					640 - 700 = 2,0			
2a		1425 0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
LDA 850	0,7 bar 136,0 - 138,0 (133,0 - 141,0)	1140-1150*		LDA 600	0 bar 126,0 - 129,0 (123,0 - 132,0)	100	24,0-285,0		
						250	7,0-11,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.82

BOSCH

Geschäftsbereich KH Kundendienst Kfz Ausrüstung
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H15

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
372 with 458R	0,70	0,30	12,0-12,1
		0,26	11,8-11,9
		0	11,5-11,7
			11,4-11,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 7,0 c

5. Edition

En

Testoil-ISO 4113

PE 6 P 100 A 320 RS 291 EP/RSV 200-1200 P 1/305R
RS 291 EP/RSV 200-1000 P 1/305R

supersedes 5.79
company Volvo-Penta
engine MD 70 B

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8 + 0,1$ mm (from BDC) $(+0,15)$
 $(-0,05)$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,7 - 13,5	0,6			2,5 ^{+0,1} ** (max. 2,2-2,9)
600	15	17,1 - 18,8				
200	9	3,8 - 4,8				

Adjust the fuel delivery from each outlet according to the values in

**

B. Governor Settings

200-1200

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
approx. 68	1200	16,0	without auxiliary spring			approx. 25	200	6,0	1200	0
	1260	10,4					100	19 - 21	250	1,2-1,8
	1320	4,0					200	5,7-6,3		
2a	1260	9,0-11,4	with auxiliary spring				270	1,8-3,8		
	1320	1,8- 5,3					350	0 - 1		
	1380	0,3- 1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
700	68,0 - 70,0	1240-1250*			100	190 - 230			
					225	11 - 15			
					Dispersion max. 2,5)				
									./.

Checking values in brackets

* 1 mm less control rod travel than col 2

In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly. 10.82

BOSCH

Geschäftsbereich KH Kundendienst Kfz Ausrüstung
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B. Governor Settings

200-1000

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
approx. 53	1000	16,0	without auxiliary spring			approx. 22	200	6,0	980	0
	1050	10,8					100	19 - 21		
	1100	3,9					200	5,7-6,3		
②a	1060	8,1-10,6	with auxiliary spring				260	2,5-4,0	240	1,2-1,8
	1100	2,0- 6,0					340	0 - 1		
	1160	0,3- 1,0								

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
700	95,0 - 97,0	1040-1050*				100	190 - 230		
						225	11 - 15		
						Dispersion max. 2,5))**	

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
②a										

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

En

①

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 MAN 9,2 k

3. Edition

En

PES 5 A 95 D 410 LS2543
..LS2543Y

RQV 250-1100 AB1038DL (1)
250-1100 AB1038DL (2)

supersedes 9.78

company: M A N

engine: D2565 M/MF/MFSV

(1-141kW-192PS-Nr.7936)

(2-137kW-186PS-Nr.7959)

Saviem - 7018

1 - 3 - 5 - 4 - 2 $\pm 0,50^\circ$
0 -72 -144-216-288° (- 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,50-1,60}{(1,45-1,65)}$ mm (from BDC) $\frac{1}{5}$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0+0,1	11,2 - 11,4	0,3 (0,6)			
250	5,9-6,1	0,9 - 1,5	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

..2543 mit ..1038L (1)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
approx. 50	1150 1300	14,4-17,6 0 - 1	-	-	-	approx. 13	100 250 315-375 = 2,0 450	min. 7,5 5,9-6,1 = 2,0 0 - 1	250 700 1140	0,5-1,2 4,3-4,6 8,3
approx. 42	10,0 4,0	1140-1150 1175-1205				③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9 +0,1
(1) 1100	112,5-114,5 (110,5-116,5)	1140-1150*	750	108,0-111,0 (106,0-113,0)	100	149 - 159	1100	11,0
			500	max. 111,5 (113,5)	250	6,0 mm RW	800	11,4
							500	11,4

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

B. Governor Settings

- 2 -

MAN 9,2 k
..2543Y mit 1038 DL (2)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
approx. 50	1150 1300	14,4-17,6 0 - 1	-	-	-	approx 13	100 250 315-375 450	min. 7,5 5,9-6,1 = 2,0 0 - 1	200 700 1140	0,5-1,2 4,3-4,6 8,3
approx. 42	10,0 4,0	1140-1150 1175-1205				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9 +0,1
(2) 1100	110,5-112,5 (108,5-114,5)	1140-1150*	750	106,5-109,5 (104,5-111,5)	100	149 - 159	1100	11,0
			500	max. 109,5 (111,5)	250	6,0 mm RW	800 500	11,4 11,4

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 HAN 10,8 a 1

6. Edition

En

Testoil-ISO 4113

PE 6 A 95 D 320 RS 2364 EP/RSV 350-1100 A8 B1070R
RS 2557 A8 B1127R

superseded 8.81
company MF-Hanomag
engine D 963 A1

**Test cold-start device according to VDT-I-DAF 004
Check page 2.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 2364 cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery 2557 cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,5	13,5 - 13,8	0,3 (0,6)	13,2	12,4 - 12,5	n 1100
	+0,1			+0,1		
350	6,7-6,9	1,4 - 2,0	0,3 (0,5)	6,6-6,8	1,4 - 2,0	n 350
500	- - - -	C, 4-5	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel rev/min mm 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					rev/min 8	Control rod travel mm 9			
loose	800 0,3-1,0					approx. 24	350 5,5	480	13,5-13,6	
approx. 57	x = 5,5						100 min. 19 350 5,9-6,1 435-495 2,0 600 0 - 1	400	13,8-14,2	
2a	12,5 1140-1150 4,0 1205-1235 1380 0,3 - 1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min cm ³ /1000 strokes 1 2		6 Rotational-speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm ³ /1000 strokes 6 7		4a Idle stop rev/min Control rod travel mm 8 9	
1100	134,0 - 136,0 (132,0 - 138,0)	1140-1150*	500	131,0 - 134,0 (129,0 - 136,0)	100	20-20,5 mm RW **			

Checking values in brackets

* 1 mm less control rod travel than col 2

8.82

BOSCH

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H21

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				approx 19	350	62	1100	13,2-13,3
approx. 50	x = 5,5						100	min. 19,5	450	13,2-13,4
	12,2 = 1140-1150						350	6,6-6,8	400	13,5-13,9
	4,0 = 1220-1250						470-530	p = 2,0		
2a	13 0 = 0,3-1,7									

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1100	124,0 - 125,0 (122,0 - 127,0)	1140-1150*		500	121,0 - 124,0 (119,0 - 126,0)	100	20-20,5 mm RW**		

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
2a										

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test oil ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 o

1. Edition

En

PE 8 P 120 A 320 LS 3816 RQV 350-1150 PA 590
1 - 8 - 7 - 2 - 6 - 3 - 54 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values apply to

engine nozzle-and-holder assemblies 1 688 901 019
and engine fuel-injection tubing 1 680 750 067

supersedes

company Daimler Benz

engine OM 422 A

243 kW (330 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0 - 4,1$
(3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,0+0,1	15,8-16,0	0,5(0,9)			
300	4,9-5,1	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	approx 10	100	min. 6,0	300	0,6-0,9
approx. 63	10,0 4,0 1400	1190-1200 1270-1300 0 - 1,0					350	4,5-4,6	580	3,6-3,8
							370-480		870	5,2-5,4
									1150	7,6

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 158,0-160,0 (155,0-163,0)	1190-1200*	LDA 600	0,7 bar 166,0-172,0 (163,0-175,0)	100	125,0-145,0	1050	11,0+0,1
			LDA 500	0 bar 140,0-142,0 (137,0-145,0)			850	11,4+0,1
							750	11,5+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 8 P..LS 3816 with..PA 590	0,47	0,70 0 0,40	11,4-11,5 11,6-11,7 10,5-10,6 10,9-11,0

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 21,9 b

1. Edition

En

PE12P120A320LS3819-1 RQV 350-1150PA493

supersedes

company: Daimler-Benz

engine OM 424 A

390 kW (530 PS)

1- 5- 9- 8- 3 - 4 - 11 -10- 2 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315² $\pm 0,5^2 (\pm 0,75^2)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $4,0-4,1$
 $(3,95-4,15)$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,1+0,1	15,9-16,1	0,5(0,8)			
350	4,8-5,0	1,4 - 2,0	0,8(0,7)			

Adjust the fuel delivery from each outlet according to the values in

Values apply to

engine nozzle-and-holder assemblies 1 688 901 019

and engine fuel-injection tubing 1 680 750 067

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	approx. 14	100 350	min.8,5 6,9-7,1	800 580 870 1150	0,9-1,1 3,5-3,7 5,2-5,4 7,8
approx. 64	10,1 4,0 1375	1190-1200 1280-1310 0-1,0				400-600 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	0,6 bar 159,0-161,0 (156,0-164,0)	1190-1200*	LDA 650	0,6 bar 164,0-170,0 (161,0-173,0)	100	120,0-140,0	-	-
			LDA 500	0 bar 127,0-129,0 (124,0-132,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.82

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement		Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm	(1)	
PE12P..LS3819-1 with .PA 493	0,38	0,60 0 0,32		10,8-10,9 11,1-11,2 9,8-9,9 10,1-10,3	

Notes

(1) when n

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 6,2 i 1

2. Edition

En

PE 6 A 90 D 320 RS 2547

RSV 250-1200 A5B 779 R

supersedes 5.81

company DAF

engine DT 615

See service Information VDT-I-DAF 004

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{2,2-2,3}{(2,15-2,35)}$ mm (from BDC) RW 9 /

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8+0,1	7,1 - 7,2	0,3(0,45)			
250	5,9-6,1	0,8 - 1,2	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in
Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	approx. 22	250	5,5	1000	10,8-10,9
	x	= 3,25							400	10,8-11,0
approx 54							250	5,9-6,1	300	11,0-11,5
⑤	9,8	1240-1250					330-390=2.0			
	4,0	1275-1305								
	1450	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 1000	0,7 bar 71,0 - 72,0 (69,0 - 74,0)	1240-1250*	LDA 600	0 bar 50,0 - 52,0 (48,0 - 54,0)	100	133,0-143,0 bei 19,5 - 21,0 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

 Port closing difference between control-rod travel 9 mm
and max. = 2.5 - 3.5° camshaft.

BOSCH

 Geschäftsbereich KM-Kundendienst Kfz-Ausstattung
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 Telefon (0714) 34-3333 Telex 430500 Bosch DE

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1000 rev/min decreasing pressure - in bar gauge pressure
increasing
XXXXXXX

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
.. RS 2547 with RSV .. A5B 779 R	0,7 bar		10,8 - 10,9
		0,25	10,6 - 10,7
		0,21	10,1 - 10,4
		0	9,8 - 10,0

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 10,0 h 4
2. Edition

En

Testoil-ISO 4113

PE 6 P 110 A 320 RS 229 Z RQV 250 - 1100 PA 427/2R

supersedes 81
company Volvo
engine THD 100TD
177 kW(240PS)

** In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,55-2,75) 2,60-2,70 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,4+0,1	13,9 - 14,1	0,4(0,8)			2,5+0,1 ** (max. 2,2-2,9)
250	5,8-5,9	1,1 - 1,5	0,3(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 13	100	min. 8,0	200	0,7-0,9
ca. 48	10,4 4,0 1350	1160-1170 1240-1270 0 - 1,0					250 325-385=2,0	5,8 - 5,9	500 800 1100	3,0-3,3 5,2-5,5 8,0

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,7 bar 139,0-141,0 (135,0-143,0)	1160-1170*	LDA 700	0 bar 117,5-120,5 (114,5-123,5)	100	290,0-340,0 bei 20,0-21,0 mm RW		-

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
 increasing
 XXXXXX

Pump/governor	Setting	Measurement	Control rod travel diminution difference XXXXXX (1)
	Gauge pressure = bar	Gauge pressure = bar	mm
RS 229-Z with PA 427/2R	0,7	0,33 0,25 0	11,4 - 11,5 11,1 - 11,2 10,4 - 10,5 10,1 - 10,2

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 q 5

En

2. Edition

PES 6 A 90 D 410 RS 2293

EP/RSV 350-1400 A 9 B 788 DL

supersedes 6.82

company Daimler-Benz

engine OM 352 A

124 kW (168 PS)

H = 22,5 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,3+0,1	7,4 - 7,5	0,3(0,45)			
350	6,7-6,9	0,5 - 1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
67-70	1400	11,3-11,4	without auxiliary spring			19-21	350	6,8		+0,1
	1440	1450 = 10,3					200	mind. 19	1400	11,3
	1475	1505 = 4,0					350	6,7-6,9	650	11,3
⑤	1145	ca. 10,3	with auxiliary spring				540-600	2,0	500	11,5
	1600	0,3-1,7					700	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1400	0,7 bar 74,0-75,0 (72,0-77,0)	1440-1450*		LDA 500	0,7 bar 62,0-64,0 (60,0-66,0)	100	13,7-14,3 mm RW		0,5-1,0 before stop
				LDA 500	0 bar 54,0-56,0 (52,0-58,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6A.. RS 2293 with .. AOB 788 DL	0,50	0 0,29	10,8 - 10,9 11,1 - 11,2 11,5 - 11,6

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device:

Locking at 0,4 - 0,5 bar

Unlocking at 0.15 - 0,25 bar

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 Vol 10,0 h 3

5. Edition

En

Testoil-ISO 4113

PE 6 P 110 A 320 RS 229Y RQV 250-1100 PA 427/2 R

supersedes 5.82

company: Volvo

engine: THD100D

199 kW(270PS)

**

In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,55-2,75)
(2,60-2,70)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,5+0,1	13,0 - 13,2	0,4(0,8)			2,5+0,1**
250	6,0-6,2	1,1 - 1,5	0,3(0,6)			(max.2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1100	15,2-17,8	-	-	-	approx 12	100	min. 7,5	200	0,7-0,9
approx 46	9,5 4,0 1370	1160-1170 1240-1270 0 - 1,0					250	6,0-6,2	500	3,5-3,8
							325-385=2,0		800	5,2-5,5
									1100	8,0

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point	Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	9
LDA 700	0,75 bar 130,0-132,0 (127,0-135,0)	1160-1170*	LDA 700	0 bar 111,0-113,0 (108,0-116,0)	100	290,0-340,0	
					250	13,0-17,0	
						Dispersion max.3	

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.32

BOSCH

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
 xxxxxx

Pump/governor	Setting	Measurement	Control rod travel (1)
	Gauge pressure = bar	Gauge pressure = bar	mm
PE 6 P..RS 229Y with..PA 427/2 R	0,75	0 0,41 0,36	10,5-10,6 9,5-9,6 10,2-10,3 9,7-9,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4

5. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1016
RQV 300 - 1300 MW 25-1
Komb. 0 403 446 122
1 - 5 - 3 - 6 - 2 - 4 je 60°

supersedes 5.82

company RVI

engine MIDR06.02-12

125 kW (170 PS)

*Port closing mark 8° after port closing at control-rod travel 10,5 mm.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) mm (from BDC) RW 9,0-12,0 mm
3,00-3,10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,1	9,1 - 9,3	0,35(0,6)			
300	6,3-6,5	0,95-1,35	0,35(0,55)			
900			0,5 (0,7)			
500			0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1400 1650	15,2-17,8 0 - 1,0				ca. 12	100 300	min.8,0 6,0-6,2		
ca.62	10,1 4,0	1440-1450 1550-1580						490-550 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5) Control rod travel mm	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1400	0,7 bar 91,0-93,0 (89,0-95,0)	1440-1450*	LDA 900	0,7 bar 87,5-91,5 (85,5-93,5)	100	94,0-104,0		
			LDA 500	0 bar 59,0-61,0 (57,0-63,0)	100-230 (80-250)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

BOSCH

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J11

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel ⁽¹⁾
	Gauge pressure = bar	Gauge pressure = bar	mm (1) diminution difference
RS 1016 with MW 25-1	0,25		10,8 - 10,9
		0,7	11,1 - 11,2
		0,1	10,3 - 10,4
		0	10,1 - 10,2

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications

Fuel Injection Pumps ②

and Governors

WPP 001/4 MB 14,6 g

2. Edition

En

PE 8 P 120 A 320 LS 3807 RQ 300/1150 PA 546

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je $45^\circ \pm 0,5^\circ$ ($\pm 0,75^\circ$)

Values apply to

engine nozzle-and-holder assemblies 1 688 901 019

and engine fuel-injection tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 4.81

company Daimler-Benz

engine OM 422 A

243 kW (330 PS)

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke

4,0 - 4,1
(3,95-4,15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,7+0,1	15,7-15,9	0,5(0,9)			
300	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm 2		Setting point		Test specifications		Setting point		Test specifications		Control rod travel	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	9,7 4,0	1190-1205 1255-1260	300	4,5	100 300 340	min.6,0 4,4-4,6 380 = 2,0	1150 600 900	10,7-10,8 11,4-11,5 10,8-11,0

Torque-control travel

on flyweight assembly dimension a =

0,2

mm

Speed regulation: At

1190-1205 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	Control rod travel mm 3a	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	Control rod travel mm 7 Control rod travel mm 6
LDA 1150	0,7 bar 156,5-158,5 (153,5 - 161,5)	-		LDA 900	0,7 bar 164,0 - 168,0 (161,0 - 171,0)	100	120,0 - 140,0
LDA 600	0,7 bar 166,0 - 172,0 (163,0 - 175,0)			LDA 500	0 bar 137,0 - 140,0 (134,0 - 142,0)		

Checking values in brackets

10.82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 8 P..LS 3807 with ..PA 546	0,47	0,70 0 0,40	11,2-11,3 11,4-11,5 10,3-10,4 10,6-10,7

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 3,1a 3

2. Edition

En

Testoil-ISO 4113

VA 6/100 H 1700 BR 119
0 460 306 044

supersedes 6, 82
company **Hanomag**
engine **D 161**

Pre-stroke setting $0,3 \text{ mm}$
Setting of the pointer at a stroke of 1 mm in
relation to outlet "A".

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Instructions and Test Equipment
VDT-WPP 161/4 B
Pre setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm ²	Difference in delivery cm ³
1 1 Timing device travel	1500	7,8-8,8 mm		
1 2 Supply pump pressure	1700	6,7-7,2 kp/cm ²		
1 3 Full-load delivery without charge-air pressure	1200	52,0-53,0 cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm ³ /1000 strokes		
1 4 Idle speed regulation	300	10,0-16,0 cm ³ /1000 strokes		3,0
1 5 Start	100	mind. 65,0 cm ³ /1000 strokes		
1 6 Full-load speed regulation	1800	21,0-29,0 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	600-760 (570-790)	1500	1550-1680
	mm	Beginn	(7,5-9,1)	8,7-9,4 (8,4-9,7)
2 2 Supply pump	rev/min	100	200	1700
	kp/cm ²	0,7-1,2 (0,5-1,4)	6,2-6,7 (6,0-6,9)	6,7-7,2 (6,5-7,4)
Overflow delivery	rev/min	500	1500	1700
	cm ³ /10 s	mind. 25	85-125 (70-140)	85-125 (70-140)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge-air pressure kp/cm ²
End stop	Full	1860-1950 (1840-1970)	0	
		1850	3,0-15,0	
		1800	(20,0-30,0)	
		1700	44,5-47,5 (43,5-48,5)	
		1200	(51,5-53,5)	
		500	44,5-47,5 (43,5-48,5)	
	Stop	1700	0	
Idle stop	Full	420-560 (400-580)	0	
		350	5,0-10,0	
		300	(9,0-17,0)	
		100	mind. 65,0	
End stop		300-550		

11.82

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J15

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 55 \pm 8^\circ$ $\gamma = 45 - 8^\circ$ $\delta = 60 + 8^\circ$	Pump Dimension IV = 5,5 mm Dimension V = - mm

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 21,9 e

1. Edition

En

PE 12 P 120 A 320 LS 3821 RQV 350-1150 PA 493-1

1 - 5 - 9 - 8 - 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0 -15 -60 -75 -120-135-180-195-240-255-300-315° ± 0,5°
(± 0,75°)

supersedes

company Daimler-Benz

engine OM 424 LA

441 kW (600 PS)

Snow plough

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0 - 4,1$
(3,95-4,15) mm (from BDC) Zyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,6+0,1	17,5-17,7	0,5(0,8)			
350	5,0-5,2	1,4-2,2	0,8(0,7)			
650	11,6+0,1					
500	10,4+0,1	C, Sp. 4u.5	0,75			

Adjust the fuel delivery from each outlet according to the values in

Values apply to

engine nozzle-and-holder assemblies 1 688 901 019

and engine fuel-injection tubing 1 680 750 057

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 8	100	min. 6,7	300	0,9-1,1
ca. 58	10,6	1190-1200					350	5,0-5,2	580	3,4-3,8
	4,0	1195-1225							870	5,1-5,4
	1350	0 - 1,0				400-600			1150	7,8
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed (2b) limitation intermediate speed (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery (6) Idle switching point		Torque-control (5) travel	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	0,6 bar 175,0-177,0 (172,0-180,0)	1190-1200*	LDA 650	0,6 bar 171,0-179,0 (168,0-182,0)	100	140,0-160,0	-	-
			LDA 500	0 bar 143,0-145,0 (140,0-148,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.82

D. Adjustment Test for Manifold Pressure Compensator

Test at $n =$ 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE12P..LS3821 with ..PA493-1	0,39		11,3 - 11,4
		0,60	11,6 - 11,7
		0	10,4 - 10,5
		0,30	10,6 - 10,8

Notes

(1) when $n =$ rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 25,7a
3. Edition

En

PE 12 P 120 A 920 LS 3809 RQV 300-1050 PA 537

1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12
0 - 15 - 60 - 75 - 120 - 135 - 180 - 195 - 240 - 255 - 300 - 315° ±0,5°
(±0,75°)

supersedes 11.81
company: FIAT
engine: 8297.22
480 kW (653 PS)
Power car

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 mm (from BDC)
(3,45-3,65)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,0±0,1	19,2-19,6	0,5(0,4)			
300	5,9-6,1	2,8- 3,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1050	15,2-17,8	-	-	-	ca. 13	100 300	min. 7,5 5,9-6,1	250 520 780 1050	0,5-0,8 4,1-4,8 6,0-6,2 8,2
ca. 61	9,0 4,0	1090-1100 1165-1195				310-410 ③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1050	0,7 bar 191,0-196,0 (188,0-199,0)	1090-1100*	LDA 1050	0 bar 139,0-143,0 (136,0-146,0)	100	210,0-240,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2
10.82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE12P.. LS3809 with. PA537	0,33	0,70 0 0,29	9,5-9,6 9,9-10,0 9,5-9,6 8,4-8,7

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

En

PES 6 P 100 A 420 RS 262 Z RQ 300/1100 PA 219DR(1)
RQV 250-1100 PA 139DR(2)

supersedes Saurer, Arbon
company D 2 K
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8-2,9$ mm (from BDC)
(2,75-2,95)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1100	11,2+0,1	11,3-11,5	0,5(0,8)			
200	9,0-9,2	3,5- 4,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

..PA 219 DR (1)

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point		Setting point		Test specifications		Setting point		Test specifications			
rev/min	Control rod travel	rev/min	Control rod travel	rev/min	Control rod travel	rev/min	Control rod travel	rev/min	Control rod travel	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9	10	11	12
650	15,7-16,3	650	16,0	1120	15,1-15,4	600	0	180	6,3-8,1	1100	11,2+0,1
				1160	8,7-13,7			250	5,3-7,3	700	11,6+0,1
				1200	0 - 9,0			350	3,1-5,3		
				1270	0			500	0		

Torque-control travel on flyweight assembly dimension a = 0,3 mm Speed regulation At 1150-1170 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /100 strokes
1	2	3	4	5	6	7
1100	113,0-115,0 (110,0-119,0)	500	700	119,0-122,0 (116,0-125,0) 111,0-115,0 (108,0-118,0)	150	160,0-180,0
			500			

Checking values in brackets

①

Torque control travel a = 0,4 mm

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed (2b) limitation intermediate speed (4a)	Fuel delivery characteristics (5a) (5b) high idle speed		Starting fuel delivery (6) Idle switching point		Torque-control (5) travel Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1100	113,0-115,0 (110,0-118,0)	1150-1170*	700	119,0-122,0 (116,0-125,0)	150	160,0-180,0	1100	11,2+0
			500	111,0-115,0 (108,0-118,0)			500	11,6+0

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing pressure - in bar gauge pressure
increasing

En

②

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 18,3e
1. Edition

40

En

PE 10 P 120 A 320 LS 3824 RQ 300/1050 PA 656

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4

0 -27 -72 -99 -144 -171 -216 -243 -288 -315° ± 0,5° (± 0,75°)

Values apply to

engine nozzle-and-holder assemblies 1 688 901 019

and engine fuel-injection tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

company

engine

Daimler-Benz

OM 423 LA

Euclid

346 kW (470 PS)

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke

(3,95-4,15)

mm (from BDC) Zyl. 10

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1050	11,8±0,1	19,0-19,2	0,5(0,8)			
300	5,0-5,2	1,6- 2,2	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point		Test specifications				Test specifications					
rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,3	600	20,0	10,8	1095-1110	300	4,3	100	min. 5,8	1050	11,8-11,9
	VH=max. 46°			4,0	1165-1195			300	4,2-4,4	600	11,8-12,0
				1300	0-1,0			335-	375=2,0		

Torque-control travel

on flyweight assembly dimension a =

0

mm

Speed regulation At

1095-1110 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /100 strokes
1	2	3		4	5	6	7
LDA 1050	0,9 bar 190,0-192,0 (187,0-195,0)	-		LDA 500	0 bar 136,0-142,0 (133,0-145,0)	100	160,0-180,0

Checking values in brackets

10.82

BOSCH

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE10P..LS3824 with..PA656	0,42	0,90	11,5-11,6
		0	11,8-11,9
		0,35	10,8-10,9
			11,0-11,2

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 K
2. Edition

En

PE 8 P 120 A 320 LS 3807 RQV 300-1150 PA 545
1-8-7-2-6-3-5-4 je 45 ° ±0,5° (±0,75°)
Values apply to
engine nozzle-and-holder assemblies 1 688 901 019
and engine fuel-injection tubing 1 680 750 067
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 4.81
company Daimler-Benz
engine OM 422 A
243 kW (330PS)

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1
(3,95-4,15) mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1150	10,7+0,1	15,7-15,9	0,5(0,9)			
300	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 11	100	min. 6,0	250	1,0-1,2
							300	4,5-4,7	550	3,4-3,8
ca. 64	9,7	1190-1200				325-460			850	4,9-5,4
	4,0	1225-1255							1150	7,7
	1350	0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b)	Fuel delivery characteristics high idle speed (5a)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min (4a)	rev/min	cm³/1000 strokes (5b)	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1150	0,7 bar 156,5-158,5 (153,5-161,5)	1190-1200*	LDA 900	0,7 bar 164,0-168,0 (161,0-171,0)	100	120,0-130,0	1150	10,7+0,1
LDA 600	0,7 bar 166,0-172,0 (163,0-175,0)		LDA 500	0 bar 137,0-139,0 (134,0-142,0)			600	11,4+0,1
							900	10,8+0,2

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
FE8P..LS3807 with ..PA 545	0,47	0,70 0 0,40	11,2-11,3 11,4-11,5 10,3-10,4 10,6-10,7

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP.001/4 MB 14,6 1 1
1 Edition

En

PE8P120A320LS3807 RQV 300-1150PA526-2
1-8-7-2-6-3-5-4 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$
Values apply to
engine nozzle-and-holder assemblies 1 688 901 019
and engine fuel-injection tubing 1 680 750 067

supersedes

company Daimler-Benz

engine OM 422 LA

276 kW (375PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0-4,1$
(3,95-4,15) mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
900	11,6+0,1	18,9-19,1	0,5(0,9)			
300	4,2-4,4	1,2- 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 10	100 300	min. 6,0 4,2-4,4	250 550 850 1150	1,0-1,2 3,4-3,7 4,9-5,3 7,6
ca. 65	10,6 4,0 1350	1190-1200 1230-1260 0- 1,0				320-465				
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 900	0,7 bar 189,0-191,0 (186,0-194,0)	1190-1200*	LDA 600	0,7 bar 180,0-184,0 (177,0-187,0)	100	140,0-160,0	-	-
LDA 1150	0,7 bar 185,0-189,0 (182,0-192,0)		LDA 500	0 bar 139,0-141,0 (136,0-144,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.32

K3

BOSCH

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure -- in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE8P..LS3807 with.. PA526-2	0,44	0,70 0 0,34	11,1-11,3 11,6-11,7 10,1-10,2 10,5-10,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 11,6 k

4. Edition

En

PE 6 P 120 A 320 RS 372

RSV 250-1100 P5/458R

supersedes 11.81

company DAF

engine DKS 1160

235 kW (320 PS)

See service Information VDT-I-DAF 004

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

 Port closing at prestroke $\begin{matrix} 2,8 - 2,9 \\ (2,75 - 2,95) \end{matrix}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
850	10,9+0,1	19,1 - 19,5	0,5 (0,9)			
250	6,2-6,4	1,1 - 1,5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	ca. 24	250	5,8	400	11,1+0,1
	x =	5,0					250	6,2-6,4	300	11,3+0,5
							628-680	= 2,0		
⑤ ca. 54	9,9	1140-1150								
	4,0	1260-1290								
	1425	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	rev/min	mm
1	2	3	4	5	6	7	8		9
LDA 350	0,7 bar 191,0-195,0 (188,0-198,0)	1140-1150*	LDA 600	0 bar 135,0-137,0 (132,0-140,0)	100	315,0-355,0 19,5- 21,0 mm RW	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P120..RS 372 with ..P5/458R	0,36		10,6 - 10,7
		0,70	10,9 - 11,0
		0	9,8 - 9,9
		0,28	10,0 - 10,2

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BET 14,9 a
2. Edition

En

Testoil-ISO 4113

PES 8P 110A 320 RS 336

RQV 250-1150 PA 320 DR

RQV 250-1150 PA 415 DR

superseded 3.82

company: Berliet

engine: MIVS 083530

246 kW (335 PS)

1-8-4-2-7-3-6-5

je 45° ±0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,8-2,9}{(2,75-2,95)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,4+0,1	11,8 - 12,0	0,4(0,8)			
250	4,0-4,2	1,4 - 2,0	0,4(0,7)			
650	13,1+0,1					
500	11,2+0,1	C, Sp. 4 u. 5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

..PA 320 DR u. ..PA 415 DR

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 9	100	min. 5,6	200	0,6-0,8
							250	4,0-4,2	520	2,9-3,2
ca. 66	10,4	1190-1200							830	4,7-4,9
	4,0	1270-1300								7,8
	1400	0 - 1,0								
							370-410 = 2,0mm		1150	

Torque control travel a = 1,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar	1190-1200*	LDA	0,7 bar	100	185,0-215,0	1150	11,4+0,1
1150	118,0-120,0 (115,0-123,0)		650	158,5-162,5 (155,5-165,5)			650	13,1+0,1
			LDA	0 bar			800	12,8+0,1
			500	116,0-118,0 (113,0-121,0)			1000	11,7+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.82

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K7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 8 P..RS 336 ..PA 320 DR ..PA 415 DR	0,7	0 0,31 0,25	13,1 - 13,2 11,3 - 11,4 12,7 - 12,8 11,7 - 12,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 6,2i2

En

2. Edition

supersedes 5.81

company DAF

engine: DT 615

Testoil-ISO 4113

PE 6 A 90 D 320 RS 2547 RSV 250-1200 A5B 2133 R

See service Information VDT-I-DAF 004

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\overset{2,2-2,3}{(2,15-2,35)}$ mm (from BDC) RW 0 9 mm/

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	10,8+0,1	7,05 - 7,15	0,3(0,45)			
250	5,9-6,1	0,8 - 1,2	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 17	250	5,5	1000	10,8-10,9
	x =	3,25							500	10,8-10,9
ca. 50,5	9,8	1240-1250					250	5,9-6,1	250	11,1-11,3
⑤	4,0	12 0-13 0					585-645	2,0		
	1490	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
LDA 1000	0,7 bar 70,5 - 71,5 (68,5 - 73,5)	1240-1250*	LDA 600	0 bar 50,0 - 52,0 (48,0 - 54,0)	-	-	-	-	-

Checking values in brackets

 Port closing difference between control-rod travel 9 mm
and max. = 2.5 - 3.5° camshaft.

* 1 mm less control rod travel than col. 2

8.82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1000 rev/min decreasing pressure - in bar gauge pressure
increasing
XXXXXX

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
.. RS 2547 with RSV .. A5B 2133 R	0,7		10,8 - 10,9
		0,25	10,6 - 10,7
		0,21	10,1 - 10,4
		0	9,8 - 10,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,8 m

En

5. Edition

PES 4 A 90 D 410 RS 2294

RSV 350-750 A O B 764 L
350-900

supersedes 8.82

company: Daimler-Benz

engine: OM 314

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	9,4-9,5	4,7-4,8	0,3(0,4)			
350	6,7-6,9	0,5-1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

350-750

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	approx. 15	350	6,8	-	-
approx. 26	x =	3,25					350	6,7-6,9**		
⑤	8,4	750								
	4,0	788-796								
	820	0,3-1,7								

** Set auxiliary idle spring at 2.0 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min	cm ³ /1000 strokes	3	4	5	6	7	8	9
1	2							
700	47,0-48,0 (45,0-50,0)	750*	-	-	100	78,0-88,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

B. Governor Settings

350-900

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	
aprox33	750	16,0				aprox. 20	350	7,0	-	-	
	830	9,0					100	min. 19			
	870	4,5					350	6,7-7,3			
approx 35	895 - 905 = 8,3 930 - 945 = 3,8 1000 0,3 - 1,7					without auxiliary spring with auxiliary spring		370-430			= 2,0
								450			0 - 1
②a											

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ ④a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to ...)							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
850	49,5-50,5 (47,5-52,5)	895-905*				100	14,7-15,3 mm RW	350	7,0

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Set auxiliary idle spring at 2.0 mm control-rod travel.

D. Adjustment Test for Manifold Pressure CompensatorTest at n = rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

En

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 15,8

1. Edition

En

Testoil-ISO 4113

PE 10 P 110 A 920/5 LS 3073 RQV 300-1150 PA 549

 1-10-9 - 4- 3 - 6 - 5 - 8 - 7 - 2
 0-27-72-99-144-171-216-243-288-315 ° $\pm 0,5$ ° ($\pm 0,75$ °)

supersedes

company KHD

 engine: BF 10L 413 F
 265 kW (360 PS)
 bei 2050 min -1
 bzw. 252 kW (342 PS)
 (Maxidyne)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\begin{matrix} 2,8-2,9 \\ (2,75-2,95) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,6+0,1	13,8-14,0	0,4(0,8)			
300	6,9-7,1	1,8 - 2,4	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max:	1220	15,2-17,8	-	-	-	approx 12	100 300 465-525 = 2,0	min. 8,5 6,9-7,1	250 550 1150	
approx. 64	9,7 4,0 1400	1190-1200 1270-1300 0 - 1,0				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 800	0,9 bar 138,0-140,0 (135,0-143,0)	1190-1200 *	LDA 1150	0,9 bar 121,0-125,0 (118,0-128,0)	100	110,0-140,0	1150 1050 1020 800	10,7+0,1 11,2+0,2 11,5+0,2 11,6+0,2
LDA 1025	0,9 bar 134,0-138,0 (132,0-140,0)		LDA 500	0 bar 85,0-89,0 (82,0-92,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

D. Adjustment Test for Manifold Pressure Compensator

Test at $n =$ 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump governor	Setting	Measurement	Control rod travel diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 10 P..LS 3073 RQV.. PA 549	0,55	0,90 0 0,39	11,2-11,3 11,6-11,7 9,4-9,5 10,1-10,3

Notes

(1) when $n =$

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WWP 001/4 KHD 19,0 1

1. Edition

En

Testoil-ISO 4113

PE 12 A 95 D 610 LS 2453 RQV 300-1150 AB 1056 DL

1- 4- 9- 8- 5 - 2 - 11- 10- 3 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315 $\pm 0,5^\circ$
($\pm 0,75^\circ$)

supersedes

company KHD

engine: BF 12 L 413 FWC
272 kW (370 PS)
at 2300 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$
($1,95-2,15$) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,3+0,1	9,1 - 9,3	0,3(0,6)			
300	6,4-6,6	0,9 - 1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm 1	Control rod travel mm rev/min 2	Degree of deflection of control lever	rev/min Control rod travel mm 4	Control rod travel mm 6	Degree of deflection of control lever	rev/min Control rod travel mm 7	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	approx. 14	100 300	min. 8,0 6,4-6,6	250 550 850 1150	0,2-0,8 2,8-3,2 4,7-5,0 7,9
approx. 66	9,3 4,0 1350	1190-1200 1240-1270 0 - 1,0				310-380				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1150	0,5 bar 90,5 - 92,5 (88,5 - 94,5)	1190-1200 *	LDA 775	0,32 bar 94,5 - 98,5 (92,5 - 100,5)	100	119,0 - 129,0 at 14,4- 14,6 mm RW	1150	10,3+0,1
			LDA 500	0 bar max. 76,5 (max. 78,5)			500	10,7+0,1
							775	10,7+0,1
							930	10,5+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

10. 82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure – in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel · diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 12 A.. LS2453 with ..AB 1056 DL	0,7		10,7 - 10,8
		0	10,2 - 10,3
		0,33	10,6 - 10,7
		0,28	10,4 - 10,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 6,1 K 1

2. Edition

En

PES 6 A 85 D 410/3 RS 2592 RQV 300-1250 AB 1158 L

supersees 82

company KHD

engine: BF 6 L 913

GMC-Fahrzeug

118 kW (160 PS)

at 2500 min⁻¹
Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,2-2,3
(2,15-2,35)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm. 6
1250	13,2+0,1	8,8-8,9	0,3(0,45)			
300	8,7-8,9	1,0-1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1290	15,2-17,8	-	-	-	approx. 14	100 300	min.10,3 8,7-8,9	250 580 920 1250	0,5-0,8 3,6-3,7 5,3-5,4 8,1
approx. 66	12,2 4,0 1500	1290-1300 1380-1410 0-1,0				350-450				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1250	0,7 bar 87,5-88,5 (85,5-90,5)	1290-1300*	LDA 800	0,7 bar 89,5-92,5 (87,5-94,5)	100	118,5-128,5 at 17,8- 18,2 mm RW	1250	13,2+0,1
LDA 1100	0,7 bar 87,5-90,5 (85,5-92,5)		LDA 500	0 bar 59,0-60,0 (57,0-62,0)			800 900 1100	14,0+0,1 13,7+0,2 13,4+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.82

K17

BOSCH

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6A..RS2592 with ..AB 1158L	0,46		13,6 - 13,7
		0,70	14,1 - 14,2
		0	12,3 - 12,4
		0,28	12,5 - 12,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 MAN 11,1 p

7. Edition

En

Testoil-ISO 4113

PES 6 A 95 D 410 LS 2542 RQV 250-1100 AB 850 DL (1)
 RQV 250-1100 ABV 14815 (2)

supersedes 2.82
 company: MAN
 engine: D 2566 M, MF
 177 kW (241 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,5-1,6}{(1,45-1,65)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,0+0,1	12,5 - 12,7	0,3(0,6)			
250	5,9-6,1	0,9 - 1,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

.. AB 850 DL (1)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
approx. 50	1140	14,4-17,6	-	-	-	approx. 13	100	min. 7,2	200	0,5-1,2
approx. 42	11,0 4,0 1300	1140-1150 1180-1210 0 - 1,0					250 315-375=2,0mm 450	5,6-5,8 0 -1,0	600 1140	3,8-4,1 8,3

Torque control travel a = 0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b)	Fuel delivery characteristics high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min (4a)	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	124,5-126,5 (122,5-128,5)	1140-1150*	750	113,0-116,0 (111,0-118,0)	100	121,5-131,5 bei 14,0 - 14,6 mm RW	1100	12,0+0,1
			500	max. 113,5 (max. 115,5)	250	6,0	500	12,1+0,1
					100-170(80-190)			

Checking values in brackets

* 1 mm less control rod travel than col. 2
 8.82

①

Torque control travel a = 0 mm

* 1 mm less control rod travel than col 2

Torque control travel a = mm

* 1 mm less control rod travel than col 2

Test Specifications Testoil-ISO 4113

Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 s 2

3. Edition

En

PES 6 A 90 D 410 RS2293 EP/RSV 350-1400 AO B2002 L (1) supersedes 10.78
 AO B2053DL (2) company: Daimler-Benz
 engine: OM 352
 (1 - 100kW - 130PS)
 (2 - 82 kW - 111PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,15-2,25}
 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery (1) cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	10,0+0,1	6,1 - 6,3	0,3(0,45)	9,0	5,1 - 5,2	
350	7,1-7,3	0,9 - 1,5	0,2(0,4)	+0,1 7,4-7,6	0,9 - 1,5	

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

2002L (1)

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				approx.	350	6,7	-	-
approx.	x =	4,0				30	100	min. 19		
61	9,0	1420-1430					350	7,1-7,3		
⑤	4,0	1505-1535					550	610=2,0		
	1600	0,3-1,7					700	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
(1) 1380	61,5 - 62,5 (59,5 - 64,5)	1420-1430*				100	14,2-14,8 mm RW	350	7,2
						1517	3,6- 4,6 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.82

B. Governor Settings

2053D! (2)

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose approx. 61	800	0,3-1,0				approx. 29	350	7,0	1380	9,0
	x	= 4,0					100	min. 19	1000	9,5
	8,0	1420-1430					350	7,4-7,6	500	9,9
	3,4	1455-1485					530-700	590-2,0		
⑤	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2) 1380	51,0 - 52,0 (49,0 - 54,0)	1420-1430 *	1000	55,5 - 58,5 (53,5 - 60,5)	100	72,25 - 82,25	350	7,5
			⑥a 600	46,0 - 48,0 (44,0 - 50,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113**B. Governor Settings**

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
⑤										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Distributor-type Fuel-injection Pumps

VE 5/10 F 2400 L 35-2 (P)
0 460 405 003; 004

supersedes 6,82
company VWV
engine: Audi 100

Overflow temperature 45°C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,14 mm \pm 0,02 (0,04)

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	2,4-2,8 mm		
1.2 Supply pump pressure	1400	5,0-5,6 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	1400	35,0-36,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery with charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle speed regulation	375	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Start	100	min. 53,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	2500	24,5-31,5 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery				

2. Test Specifications checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,3-2,1(1,0-2,4)	1400 (1,9-3,3)	2400 5,1-5,9(4,8-6,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,8-3,4		2400 7,5-8,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55,1-138(40-153)		2400 55-138(40-153)

2.3 Fuel deliveries				3. Dimensions <small>for assembly and adjustment mm</small>	
Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)	Designation	
End stop	2650 2500 2400 1400 750	6,0-12,0 (5,0-13,0) (24,0-32,0) 29,5-31,5 (28,2-32,8) (33,2-37,8) 24,5-27,5 (23,0-29,0)		K KF MS SVS	-- 5,7-5,9 1,7-1,9 max. 3,0
switch-off elect.	400	0		XK XL B	18,5-20,5 9,0-12,5
Idle stop	500 375	max. 3,5 (4,0-12,0)		Observations	
End stop	400 500	min. 16,0 max. 23,0			
2.4 Solenoid	max. cut-in voltage xxx min. 10,0 V test voltage xxx rated voltage 12V.				

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWV 2,0a
3. Edition

En

VE 5/10 F 2400 L 35 (P)
0 460 405 001; 002

superseded 6.82
company: VWV
engine: Audi 100

Overflow temperature 45°C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,14 mm \pm 0,02 (0,04)

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	2,4-2,8 mm		
1.2 Supply pump pressure	1400	5,0-5,6 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	1400	35,0-36,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery with charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle speed regulation	375	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Start	100	min. 53,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	2500	24,5-31,5 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	--	--		

2. Test Specifications checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,3-2,1(1,0-2,4)	1400 (1,9-3,3)	2400 5,1-5,9(4,8-6,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,8-3,4		2400 7,0-8,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138(40-153)		2400 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2650 2500 2400 1400 750	6,0-12,0 (5,0-13,0) (24,0-32,0) 29,5-31,5 (28,2-32,8) (33,2-37,8) 24,5-27,5 (23,0-29,0)	
switch-off			
elect.	400	0	
Idle stop	500 375	max. 3,0 (4,0-12,0)	
End stop	400 500	min. 16 max. 23	
2.4 Solenoid	max. cut-in voltage xxxx min. 10,0 V rated voltage 12V.		

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,7-5,9
MS	1,7-1,9
SVS	max. 3,0
XK	18,5-20,5
AXL	9,0-12,5
B	

Observations

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9.82

K24

k24

Test Specifications Fuel Injection Pumps and Governors

40

VDT-WPP 001/4 BÜS 12,3 g

3. Edition

En

Testoil-ISO 4113

PE 6 P 120 A 821 LS 282 RQV 300-1050 PA 249 D (1)
RQV 300-1100 PA 258 D (2)
RQV 400-1050 PA 316 D (3)

Testing with T nozzles and fuel lines 8x2x1000
according to ..WPP 110/2 !

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 10.75

company MAN-Büssing

engine D 3256 BTXU

(290 PS - 1)

(320 PS - 2)

D 3256 BTYU

(316 PS - 3)

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Zyl. 6 (+ 0,15
- 0,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1000	12	20,1 - 20,8	0,8			
600	9	9,8 - 11,3				
	15	22,2 - 24,3				
200	9	5,3 - 6,5				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQV .. 249 D (1)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 50	1050	15,0-18,8	-	-	-	ca. 13	150	9,4-11,0	1050	8,3
	1100	10,0-14,8					250	6,9- 9,2		
	1180	0 - 7,4					350	2,8- 5,4	1050	0
	1260	0					450	0	500	0,6-0,7

Torque control travel \pm 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
LDA 1050	0,7 bar 226,0-228,0	1090-1100 *	LDA 800	0,7 bar 206,0-210,0	100	16 mm RW		
LDA 1050	0 bar 207,0-211,0		500	185,0-191,0	Change-over point max. 200 min ⁻¹			
(Increase by \pm 3,0 cm ³)								

Checking values in brackets

* 1 mm less control rod travel than col. 2

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8.82

B. Governor Settings

RQV .. 258 D (2) BÜS 12,3 g - 2 -

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1140	14,4-17,4	-	-	-	ca. 13	100	7,6-10,3	200	0,6-1,2
	1180	8,0-13,0					200	5,7- 8,6	500	3,4-3,7
	1220	0 - 8,4					300	2,5- 5,4	900	5,6-6,0
	1280	0					410	0	1140	8,3
						(3a)			1100	0
									500	0,4-0,5

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1100	0,7 bar 236,0-238,0	1090-1100 *	LDA 800	0,7 bar 194,0-198,0	100	16 mm RW		
			500	192,0-198,0				
LDA 1100	0 bar 204,0-210,0							
(Increase by ± 3,0 cm ³)								
						Change-over point. max. 200 min ⁻¹		

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

RQV .. 316 D (3)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1075	15,0-18,2	-	-	-	ca. 13	250	8,9-11,0	1075	8,3
	1120	10,2-14,5					300	7,1-10,0		
	1200	0 - 7,8					400	2,8- 5,5	1070	0
	1280	0					490	0	600	0,5-0,7
						(3a)				

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a ②b	Fuel delivery characteristics high idle speed ⑤b ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel Control rod travel mm ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	7	rev/min 8	9
LDA 1050	0,85 bar 239,0-241,0	1090-1100 *	LDA 800	0,85 bar 212,0-216,0	100	16 mm RW		
			500	201,0-207,0				
LDA 1050	0 bar 183,0-189,0							
(Increase by ± 3,0 cm³)					Change-over point. 320-270 min⁻¹		./.	

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing
xxxxxxx

BÜS 12,3 g - 3 -

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm xxxxxxx
282with249 D	0,40 - 0,42	0,22 - 0,26	- 0,1 mm - 1,1 mm
282with258 D	0,46 - 0,49		- 0,1 mm Difference ca. 2,3 mm
282with326 D	0,68 - 0,75	0,24 - 0,28	- 0,1 mm - 3,0 mm

Notes

(1) when n =

1050

rev/min and
gauge pressure =

0,7
0,85

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 2,4 p

1. Edition

En

PES 4 MW 55/320 RS 22
RW 375/2200 MW 27-1
0 403 244 009
1 - 3 - 4 - 2
0 -90 -180-270 \pm 0,50 (0,75)

supersedes

company Daimler-Benz

engine OM 616 - US

51,5 kW (70 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10 - 2,20 mm (from BDC) 21 mm Control rod travel
ohne ADA (2,05 - 2,25)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	13,5+0,1	4,0 - 4,1	0,25(0,3)			
375	6,9-7,1	0,65-0,75	0,1 (0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

ohne ADA

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm	rev/min	4	mm	rev/min	7	rev/min	mm
2	3		5	6			8	9
27-31 (1)	min.12	100	69 (7)	12,6-12,8	2180		(12) 20,5-21,5	100
(2)	6,9-7,1	375	(8)	11,7	2280-2300		(13) 13,2-13,4	1600
(3)	**	385	(9)	4,0	2650-2710		(14) 13,5-13,6	1000
(4)	-	-	(10)	0,0-1,0	2950			
(5)	2,0	650-700	(11)	-	-		(6) Switching point	
							250-300 (230-320)	

C. Settings for Fuel Injection Pump with Governor Mounted

ohne ADA

Full-load delivery (19)		Full-load speed regulation (8a)		Variations in fuel delivery (17)		Starting fuel delivery idle (18)		Difference	
Test oil temp 40°C (104°F)									
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes		
1	2	3	4	5	6	7	8		
2180	40,5-42,5 (39,5-43,5)	2280-2300* (2270-2310)	1600	40,0-42,0 (39,0-43,0)	100	min. 55,0	6,0	(12)	
					375	6,5-7,5 (6,0-9,0)	1,0 (1,5)		
			1000	40,0-41,0 (39,0-42,0)	2550	15,0-21,0 (14,0-22,0)	2,5 (3,0)	(15) (16)	

Checking values in brackets

* 1 mm less control rod travel than in Column 2

1. Test sequence - Change in VDT-W-420/300
Suppl. 2, Ed. 2

Section 4.1 - Adjust the spring retainer (compensation capsule)

New text:

Run the injection pump at $n = 1,000 \text{ min}^{-1}$.
 Fix the control lever at 69° .
 Using a pin wrench, turn in the spring retainer so far that the control-rod travel is reached at $n = 1,000 \text{ min}^{-1}$. Pin wrench = KDEP 1064/1.
 Measure the full-load delivery.
 Fix the control lever at 49° .
 Drive the injection pump at $n = 1,000 \text{ min}^{-1}$.
 The control-rod travel must be 8,6 - 9,3 mm.

Section 4.3 changes as follows:

Drive the injection pump at $n = 800 \text{ min}^{-1}$.
 Set the control lever so that the control-rod travel reaches 1.4 - 1.7 mm.
 The control lever must lie within the permissible tolerance.
 Move the idle stop up against the control lever and lock it there.
 Reduce the pump speed to $n = 375 \text{ min}^{-1}$ and release the leaf spring (32) with the lower adjusting screw (28) until the control-rod travel specified in the Test-Specifications Sheet is reached.
 Carry on according to the Testing Instructions, taking into account that Section 4.8 no longer applies.

2. Testing of Sections A, B and C is carried out without altitude pressure compensator (ADA) aneroid box.
 After this test has been completed, the aneroid box is refitted.

Testing the governor with the ADA aneroid box.

Pump speed	Pressure (abs. in mbar)	Reduction from the maximum full-load control-rod travel (mm)
1,000	840	1.0 - 1.2 (0.95 - 1.25)
1,000	907	0.3 - 0.6 (0.25 - 0.65)
1,000	667	2.4 - 2.9 (2.35 - 2.95)

3. Pin projection dimension = $16.65 \pm 0.05 \text{ mm}$
4. ** At this pump speed, apply pressure to the control lever and increase the control-rod travel by $0.4^{+0.1} \text{ mm}$.
 The idle delivery may not change.

5. Setting angle - Idle/full-load $38 - 42^{\circ}$
6. Sensing-lever setting: Bring sensing lever into contact at $n = 375 \text{ min}^{-1}$ (control lever in full-load position). Control-rod travel must be 0.1 (0.1 - 0.2) mm more than the full-load control-rod travel at $n = 1,000 \text{ min}^{-1}$.
7. Pneumatic shut-off check:
Move the control lever to the idle position.
Drive the injection pump at $n = 375 \text{ min}^{-1}$.
At $P_{\mu} = 450 \text{ mbar}$ (338 mm Hg) (vacuum), the control rod must move rapidly to control-rod travel = 0 mm position.
8. Mechanical shut-off check:
Overcome the idle stop at the control lever.
Drive the injection pump at $n = 200 \text{ min}^{-1}$.
The control-rod travel must remain below 5 mm.

①

Test Specification Testoil-ISO 4113-40

Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 n

5. Edition

En

PES 6 A 90 ^C 410 RS 2293, Z RQV..AB740L, 780L, 781L (1-2) superseded by 477
^D RS 2293Y RQV..AB740L (3) company Daimler-Benz
 RS2293W,X RQV..AB740L (4-5) engine OM 352 A

(1 - 130 PS)
 (2 - 168 PS)
 (3 - 145 PS)
 (4 - 156 PS)
 (5 - 130 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,5 - 5,0	0,4			
	6	1,8 - 2,6				
	12	7,3 - 8,3				
200	9	2,0 - 2,8				

Adjust the fuel delivery from each outlet according to the values in []

B. Governor Settings

RQV 300-1425 AB740L (1)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
approx. 66	1425 1500 1550 1650 1790	16,0-19,4 11,6-16,0 8,2-13,4 1,4-8,0 0	-	-	-	approx. 10	100 300 450 600 760	6,6-7,8 4,9-6,4 3,0-4,2 1,3-2,8 0	400 1425 -	1,4-2,2 8,1 -

Torque control travel a - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
(1 - 1400	2293 with 740) 61,5-62,5 (59,5-64,5)	1455-1465 *			100	71,0-81,0 13,9-14,3		mm RW
					250-180 min ⁻¹			./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.82

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RQV 300-1425 AB780L, 781L (1)

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
approx. 68	1425 1500 1600 1650 1770	16,0-19,0 10,8-15,3 3,3-10,0 0 - 7,4 0	-	-	-	approx. 10	200 300 450 600 700	6,0-7,4 4,9-6,6 3,0-3,9 1,4-2,8 0	400 1425	1,2-2,2 8,3
						3a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(1 - 1400	2293 with 780, 781) 61,0 - 63,0	1455-1465 *			100	72,25-82,25	700 (780)	
					250-180 min ⁻¹		1300 (781)	

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

RQV 300-1425 AB740L (2)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
approx 66	1425 1500 1550 1650 1790	16,0-19,4 11,6-16,0 8,2-13,4 1,4-8,0 0	-	-	-	env. 10	100 300 450 600 760	6,6-7,8 4,9-6,4 3,0-4,2 1,3-2,8 0	400 1425	1,4-2,2 8,1
						3a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2 - 1375	2293Z with 74 0) 73,5 - 75,5	1435-1445 *			100	72,25-82,25		
					250-180 min ⁻¹			

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

RQV 300-1425 AB780L, 781L (2)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
approx. 68	1425 1500 1600 1650 1770	16,0-19,0 10,8-15,3 3,3-10,0 0-7,4 0	-	-	-	approx 10	200 300 450 600 700	6,0-7,4 4,9-6,6 3,0-3,9 1,4-2,8 0	400 1425	1,2-2,2 8,3
						(3a)			-	-

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
(2 - 2	293Z with 780 , 781)								
1375	73,5 - 75,5	1435-1445 *				100	72,25-82,25	700(780)	
						250-180 min ⁻¹		1300(781)	

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

RQV 300-1425 AB740L (3)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
approx 66	1425 1500 1550 1650 1790	16,0-19,4 11,6-16,0 8,2-13,4 1,4-8,0 0	-	-	-	approx 10	100 300 450 600 760	6,6-7,8 4,9-6,4 3,0-4,2 1,3-2,8 0	400 1425	1,4-2,2 8,1
						(3a)			-	-

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
(3 - 2293Y with 740)									
1400	70,0 - 72,0	1455-1465 *				100	72,25-82,25		
						250-180 min ⁻¹			

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

RQV 300-1425 AB740 (4)

①

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
approx 66	1425	16,0-19,4	-	-	-	approx. 10	100	6,6-7,8	400	1,4-2,2
	1500	11,6-16,0					300	4,9-6,4		
	1550	8,2-13,4					450	3,0-4,2		
	1650	1,4-8,0					600	1,3-2,8		
	1790	0					760	0	-	-
						③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1400	293W with 740 71,0 - 73,0	1455-1465 *			100	72,25-82,25		
					250-180 min ⁻¹			

Checking value in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

RQV 300-1425 AB740L (5)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
approx. 66	1425	16,0-19,4	-	-	-	approx. 10	100	6,7-7,8	400	1,4-2,2
	1500	11,6-16,0					300	4,9-6,4		
	1550	8,2-13,4					450	3,0-4,2		
	1650	1,4-8,0					600	1,3-2,8		
	1790	0					760	0	-	-
						③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1400	93X with 740 57,0-59,0	1455-1465			100	72,25-82,25		
					250-180 min ⁻¹			

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications

Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 1,5f
2. Edition

En

VE 4/9 F 1500 R 25-3
R 25-3 P

Over flow temperature 45°C

0 460 494 035
0 460 494 036

superseded 482
company: VWW
engine: EA 086

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,4-3,8 mm		
1.2 Supply pump pressure	1500	5,4-6,0 bar (kgf/cm ²)		
1.3 Full-load delivery without charge-air pressure	1500	29,5-30,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery with charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle speed regulation	415	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Start	100	min. 38,0 cm ³ /1000 strokes		
1.6 Full-load speed regulation	1550	20,0-24,0 cm ³ /1000 strokes		
1.7 Load-dependent start of delivery	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,3-2,1(1,0-2,4)	1500 (2,9-4,3)
	n = rev/min bar (kgf/cm²)	400 2,4-3,0	
	Overflow delivery	n = rev/min cm³/10 s	500 55-138(40-153)
2.3 Fuel deliveries			
Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1610	max. 9,0	
	1550	(19,0-27,0)	
	1500	(27,7-32,3)	
	600	18,0-21,0 (16,5-22,5)	
switch-off elect.	400	bei 2,5 V 0	
Idle stop	450-550 415	0 (4,0-12,0)	
End stop	400 500	min. 13,5 max. 19,5	
2.4 Solenoid	max. cut-in voltage xxx min. 10V. rated voltage 12V.		

3. Dimensions	
Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max. 3,6
XK	19,5-21,
XL	9,2-12,
A	
B	
Observations	

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Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 VMA 2,2a
2. Edition

En

VE 4/10 F 2100 L 75

0 460 404 024

Over flow temperature 45° C

supersedes 6.82
company: VM-Motori
engine: HR 492 HT

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting -- mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1600	6,3-6,7 mm	0,7	
1.2 Supply pump pressure	1600	5,8-6,4 bar (kgf/cm ²)	0,7	
1.3 Full-load delivery without charge-air pressure	600	34,0-37,0 cm ³ /1000 strokes	0	2,5 (3,0)
Full-load delivery with charge-air pressure	1600	47,5-48,5 cm ³ /1000 strokes	0,7	
1.4 Idle speed regulation	400	15,0-19,0 cm ³ /1000 strokes	0	2,5 (3,0)
1.5 Start	100	min. 65,0 cm ³ /1000 strokes	0	
1.6 Full-load speed regulation	2100	41,5-44,5 cm ³ /1000 strokes	0,7	
1.7 Load-dependent start of delivery	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,7 bar	n = rev/min mm	1000 1,9-2,7 (1,6-3,0)	1600 (5,8-7,2)	2100 9,3-9,9 (8,9-10,3)
2.2 Supply pump LDA=0,7 bar	n = rev/min bar (kgf/cm ²)	400 1,5-2,1		2100 7,5-8,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)		2100 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2450	max. 5,0	0,7
	2300	24,5-30,5 (23,5-31,5)	0,7
	2100	(40,7-45,3)	0,7
	1600	31,5-34,5 (30,7-35,3)	0
	1600	(45,7-50,3)	0,7
	+700	43,0-46,0 (41,5-47,5)	0,3
	600	(32,5-38,5)	0
switch-off	2100	0	
Idle stop	550-750 400	0 (13,0-21,0)	
End stop	400	min. 37	
	500	max. 37	

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	4,4-4,6
+ FH	1,8-2,4
XK	20,2-22,2
B XL	10,0-13,3

Observations

+ Manifold-pressure
compensator stroke
= 4,2 mm.
Correction at the
adjusting nut (46).

2.4 Solenoid max. cut-in voltage xxx min. 10,0 V
rated voltage 12V.

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 11,8 e

5. Edition
En

supersedes 11.81

company: Daimler-Benz

engine: OM 355

PE 6 P 100 A 720 RS 15

RQ 250/1100 PA 269 R

PA 278 R *

1 - 5 - 3 - 6 - 2 - 4 je 60°

*278 Functional check of roll-start block: Adjust solenoid until control rod is 1,5...2,5 mm from stop.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,75-2,75)
2,80-2,90

mm (from BDC) RW 10,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,0	11,85 - 12,05	0,3(0,6)			
250	+0,1 7,9-8,1	1,70 - 2,30	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
600	15,6-16,4	600	16,0	12,0	1125-1145	250	6,0	100	min.7,5	1100	13,0-13,1
1350	0 - 1			4,0	1195-1230			250	5,9-6,1	450	13,2-13,33
								385-425	=2,0		

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: 1125-1145 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery idle speed rev/min 6 cm ³ /1000 strokes/mm 7	
1100	118,5-120,5 (116,5-122,5)	450	450	101,0 - 105,0 99,0 - 107,0)	100	140-160	

Checking values in brackets

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 b 1

3. Edition

En

Testoil-SO 4113

PES 6 P 120 A 320 RS 417 RQV 300-1150 PA 527 K

supersedes 2.82

company: RVI

engine: MIDS 062030
158 kW (215 PS)

Values apply to
engine nozzle-and-holder assemblies 1 688 901 019
and engine fuel-injection tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port-closing mark 9.5° camshaft after port closing of cylinder 1.

Port closing at prestroke 2,8-2,9
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	8,5-8,6	14,8 - 15,0	0,5(0,9)			
300	4,1-4,3	1,8 - 2,4	0,5(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 10	100	min. 5,7	250	0,4-0,7
ca. 58	7,5 4,0 1400	1205-1215 1275-1305 0-1,0				330-345	300	4,1-4,3	550	3,6-3,7
									850	5,1-5,2
									1150	7,5

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	147,5-149,5 (144,5-152,5)	1205-1215*	750	132,0-138,0 (129,0-141,0)	100	120,0-140,0	1150	8,5+0,1
			500	80,0-86,0 (77,0-89,0)			350	7,0+0,4
							750	7,7+0,2
							500	7,2+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

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L14

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 6,2 n

2. Edition

En

Testoil-ISO 4113

PE 6 A 90 D 320 RS 2577

RSV 250-750 A 7 B 2125 R

 superseded 12.80
 company DAF
 engine DD 575

** Set idle-auxiliary spring at 2,0 mm.

See Service Information VDT-I-DAF 004.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $(2,15-2,35)$ $2,20-2,30$ mm (from BDC) $RW = 9,0$ mm;

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	11,0	7,4 - 7,6	0,4(0,55)			
	+0,1					
250	5,9-6,1	0,7 - 1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

Port closing difference between control-rod travel

B. Governor Settings

9 mm and max. = 2.5 - 3.5

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 22	250	6,0	750	11,0-11,1
	X =	5,0					100	min. 19	700	11,0-11,3
							250	••		
ca. 4	770-780	= 10,0					260-320	= 2,0		
⑤	795-815	= 4,0								
	955	= 0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
750	74,0 - 76,0 (72,0 - 78,0)	760-770*	-	-	100	19,5-21,0 mm RW			

Checking values in brackets

* 1 mm less control rod travel than col. 2

8.82

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,8 m
1. Edition

En

PE6PT00A/20RST5

RSV350-750P1/365R

supersedes

company: Daimler-Benz
OM 355

engine:

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) mm (from BDC) RW= 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
730	13,0+0,1	10,6-10,8	0,3(0,6)			
350	7,9-8,1	1,4- 2,0	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	750	0,3-1,0	-	-	-	ca. 17	350	8,0	-	-
	x = 3,25						100	min. 19,5		
							350	7,9-8,1		
ca. 33	12,0	750-760					355-415	= 2,0		
⑤	4,9	750-795						* *		
	850	0,3-1,7								

* * Set idle-auxiliary spring at 1.5 - 2.0 mm.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm ³ /1000 strokes 2	3		4	5	6	7	8	9
730	106,0-108,0 (104,0-110,0)	750-760 *		-	-	100	140,0-150,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.82

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP Q01/4 SCA 8,0 1
1. Edition

En

PE 6 P 110 A 720 RS 3076

RSV 350-1200 P1/452

supersedes
company Scania
engine D S 8

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4
(3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,9±0,1	12,1-12,3	0,4(0,8)			
940	4,8-5,0	1,4- 2,0	0,6(0,85)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Control-lever deflection in degrees 7		Lower rated speed rev/min 8		3 Torque control Control rod travel rev/min mm 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3							Control rod travel mm 9			
loose	800 0,3-1,0 X= 4,0		-	-	-	ca.24		350 4,4 100 min.20,0 350 4,8-5,0		-	-
Ca.62 2a	10,9 1240-1250 1450 0,3- 1,7										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel rev/min mm 8 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7			
900	121,0-123,0 (119,0-125,0)	1240-1250*	-	-		100	190,0-240,0 20,0- 21,0 mm RW 14,0-20,0 (11,0-23,0)	-	-
						940			

Checking values in brackets

* 1 mm less control rod travel than col 2

10.82

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①

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11,0 u8
1. Edition

En

PE 6 P 120 A 720 RS 7001 RQV200-1000 PA 612

supersedes

company Scania

engine: DN 11

BUS-Motor

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

* from FD 141: 5,0-5,1 to FD 052: 4,4-4,5 mm
Port closing at prestroke (4,95-5,15) mm (from BDC) (4,35-4,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,3+0,1	18,3-18,5	0,5(0,9)			
225	4,0-4,2	0,8-1,2	0,5(0,8)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1000	15,2-17,8	-	-	-	ca. 10	100	min. 5,6	150	0,5-0,8
ca. 59	10,3 4,0 1250	1040-1050 1120-1150 0-1,0				260-365	225	4,0-4,2	430 720 1000	3,0-3,5 5,0-5,2 7,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1000	183,0-185,0 (180,0-188,0)	1040-1050*	600	164,0-168,0 (161,0-171,0)	100	250,0-300,0 20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.82

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 6,2 m

4• Edition

En

Testoil-ISO 4113

PE 6 A 85 D 320 RS 2546 RSV 250-750 A 7 B 2125 R

supersedes

company DAF

engine: DD 575 DF/615 DT

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $(2,1 - 2,3)$ mm (from BDC) RW = 9 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	12,1+0,1	6,0 - 6,2	0,3(0,45)			
250	8,4-8,6	0,8 - 1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

Port closing difference between control-rod travel 9 and max. = 3,0-4,0°.

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
des-serré	800	0,3 - 1,0	-	-	-	ca. 16	250	8,5	750	12,1+0,1
	x =	4,5							700	12,1+0,3
⑤ ca. 40	11,1	770-780					250	**		
	4,0	795-815					260-320	=2,0mm		
	995	0.3-1.7								

** Set idle-speed auxiliary spring at 2,0 mm control-rod travel,

then 1/2 turn back.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
750	60,5 - 62,5 (58,5 - 64,5)	770-780*		-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.92

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 5,7 o 1
3. Edition

En

PES6A90D410RS2293

RSV575-1250A1B618L

supersedes 9.82
company: Daimler-Benz
engine: OM 352
88 kW (120 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	10,5+0,1	6,1-6,2	0,3(0,45)			
575	6,4-6,6	1,1-1,7	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.28	575	5,5	-	-
	X=5,0						100	min.19,0		
							580-610	=2,0		
								**		
Ca.58	9,5	1250-1260					650	max.1,0		
⑤	4,0	1275-1295								
	1250	0,3-1,7								

** Set idle-speed auxiliary spring at 2,0 mm control-rod travel,
then 1/2 turn back.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to ... rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm ³ /1000 strokes 2	3		4	5	6	7	8	9
1230	61,0-62,0 (59,0-64,0)	1250-1260*	-	-	-	100	71,0-81,0 14,7- 15,1mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 s 4
1. Edition

En

PES6A90D410RS2293

RSV 350-1400A0B1080DL

supersedes

company Daimler-Benz

engine OM 352

92 kW (125 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,7-9,8	6,3-6,4	0,3(0,45)			
350	7,4-7,6	1,2-1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 23	350	7,0	1400	9,7-9,8
		X=6,0					100	min. 19,5	600	9,8+0,2
ca. 68							350	7,4-7,5		
⑤							510-570	2,0		
	8,7	1440-1450								
	4,0	1510-1540								
	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1400	63,0-64,0 (61,0-66,0)	1440-1450*	600	51,0-53,0 (49,0-55,0)	100	78,0-88,0 15,1- 15,5 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

①

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 MB 12,8 b 2

En

1. Edition

Testoil-ISO 4113

PE 8 P 100 A 320 LS 810

RQV 300-1250 PA 227 R.

supersedes

company Daimler Benz

engine: OM 402

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1 $\pm 0,50$ 0 -45 -90 -135 -180-225-270-315 ($\pm 0,75$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\begin{matrix} (3,35-3,55) \\ 3,40-3,50 \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,3-10,4	10,0 - 10,2	0,3 (0,6)			
300	7,4-7,6	1,7 - 2,3	0,3 (0,5)			
600	---	C, Sp. 4-5	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	1250	15,2-17,8	-	-	-	ca. 12	100	min. 9,0	300	0,4-1,5
	1450	0 - 1					300	7,4-7,6	800	4,4-4,8
ca. 66	9,3	1290-1300					630-690 = 2,0		1250	8,2
	4,0	1330-1360								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed (2b) limitation intermediate speed (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery (6) Idle switching point	Torque-control (5) travel Control rod travel mm		
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1250	100,0-102,0 (98,0-104,0)	1290-1300 *	600	78,0-83,0 (76,0-85,0)	100	110,0-130,0		
					100-220 (80-240)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.80

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